



- 1 -

SEQUENCE LISTING

<110> Gurney, Mark  
Bienkowski, Michael J.

<120> ALZHEIMER'S DISEASE SECRETASE, APP SUBSTRATES THEREFOR, AND USES  
THEREOF

<130> 28341/6280NCP

<140> 09/668,314

<141> 2000-09-22

<150> 60/169,232

<151> 1999-12-06

<150> 09/416,901

<151> 1999-10-13

<150> 60/155,493

<151> 1999-09-23

<150> 09/404,133

<151> 1999-09-23

<150> PCT/US99/20881

<151> 1999-09-23

<150> 60/101,594

<151> 1998-09-24

<160> 82

<170> PatentIn Ver. 2.0

<210> 1

<211> 1804

<212> DNA

<213> Homo sapiens

<400> 1

atgggagcac tggccccgggc gctgctgctg cctctgctgg cccagtggct cctgcgcgcc 60  
gccccggagc tggccccggc gcccttcacg ctgccccctc ggggtggcgc ggccacgaac 120  
cgcgtagttg cgccccaccc gggacccggg acccctgccc agcgccacgc cgacggcttg 180  
gcgctcgccc tggagcctgc cctggcgctc cccgcggggc ccgccaactt cttggccatg 240  
gtagacaacc tgcaggggga ctctggccgc ggctactacc tggagatgct gatcgggacc 300  
ccccgcaga agctacagat tctcggtgac actggaagca gtaactttgc cgtggcagga 360  
acccgcact cctacataga cacgtacttt gacacagaga ggtctagcac ataccgctcc 420  
aagggtttg acgtcacagt gaagtacaca caaggaagct ggacgggctt cgttggggaa 480  
gacctcgtea ccatccccaa aggcttcaat acttcttttc ttgtcaacat tgccactatt 540  
tttgaatcag agaatttctt tttgcctggg attaaatgga atggaatact tggcctagct 600  
tatgccacac ttgccaagcc atcaagttct ctggagacct tcttcgactc cctggtgaca 660  
caagcaaaca tccccaacgt tttctccatg cagatgtgtg gagccggctt gcccgttgct 720  
ggatctggga ccaacggagg tagtcttgct ttgggtggaa ttgaaccaag tttgtataaa 780  
ggagacatct ggtatacccc tattaaggaa gactggtact accagataga aattctgaaa 840  
ttggaaattg gaggccaaag ccttaatctg gactgcagag agtataacgc agacaaggcc 900  
atcgtggaca gtggcaccac gctgctgcgc ctgccccaga aggtgtttga tgcggtggtg 960  
gaagctgtgg cccgcgcacg tctgattcca gaattctctg atggtttctg gactgggtcc 1020  
cagctggcgt gctggacgaa ttcggaaaca ccttggctct acttccctaa aatctccatc 1080  
tacctgagag atgagaactc cagcaggtca ttccgtatca caatcctgcc tcagotttac 1140  
attcagccca tgatgggggc cggcctgaat tatgaatgtt accgattcgg catttcccca 1200  
tccacaaatg cgctggtgat cgggtgccacg gtgatggagg gcttctacgt catcttcgac 1260

```

agagcccaga agaggggtggg ctctgcagcg agcccctgtg cagaaattgc aggtgctgca 1320
gtgtctgaaa tttccgggcc tttctcaaca gaggatgtag ccagcaactg tgtccccgct 1380
cagtctttga gcgagcccat tttgtggatt gtgtcctatg cgctcatgag cgtctgtgga 1440
gccatcctcc ttgtcttaat cgtcctgctg ctgctgccgt tccgggtgtca gcgtcgcccc 1500
cgtgaccctg aggtcgtcaa tgatgagtc tctctgggtca gacatcgctg gaaatgaata 1560
gccaggcctg acctcaagca accatgaact cagctattaa gaaaatcaca tttccagggc 1620
agcagccggg atcgatgggtg gcgctttctc ctgtgcccac ccgtcttcaa tctctgttct 1680
gctcccagat gccttctaga ttcactgtct tttgattctt gatatttcaag ctttcaaata 1740
ctccctactt ccaagaaaaa taattaaaaa aaaaacttca ttctaaacca aaaaaaaaaa 1800
aaaa                                              1804

```

<210> 2  
 <211> 518  
 <212> PRT  
 <213> Homo sapiens

<400> 2

Met	Gly	Ala	Leu	Ala	Arg	Ala	Leu	Leu	Leu	Pro	Leu	Leu	Ala	Gln	Trp
1				5					10					15	
Leu	Leu	Arg	Ala	Ala	Pro	Glu	Leu	Ala	Pro	Ala	Pro	Phe	Thr	Leu	Pro
			20					25					30		
Leu	Arg	Val	Ala	Ala	Ala	Thr	Asn	Arg	Val	Val	Ala	Pro	Thr	Pro	Gly
	35						40					45			
Pro	Gly	Thr	Pro	Ala	Glu	Arg	His	Ala	Asp	Gly	Leu	Ala	Leu	Ala	Leu
	50					55					60				
Glu	Pro	Ala	Leu	Ala	Ser	Pro	Ala	Gly	Ala	Ala	Asn	Phe	Leu	Ala	Met
	65				70				75						80
Val	Asp	Asn	Leu	Gln	Gly	Asp	Ser	Gly	Arg	Gly	Tyr	Tyr	Leu	Glu	Met
				85					90					95	
Leu	Ile	Gly	Thr	Pro	Pro	Gln	Lys	Leu	Gln	Ile	Leu	Val	Asp	Thr	Gly
			100					105					110		
Ser	Ser	Asn	Phe	Ala	Val	Ala	Gly	Thr	Pro	His	Ser	Tyr	Ile	Asp	Thr
		115					120					125			
Tyr	Phe	Asp	Thr	Glu	Arg	Ser	Ser	Thr	Tyr	Arg	Ser	Lys	Gly	Phe	Asp
	130					135					140				
Val	Thr	Val	Lys	Tyr	Thr	Gln	Gly	Ser	Trp	Thr	Gly	Phe	Val	Gly	Glu
	145				150				155						160
Asp	Leu	Val	Thr	Ile	Pro	Lys	Gly	Phe	Asn	Thr	Ser	Phe	Leu	Val	Asn
				165					170					175	
Ile	Ala	Thr	Ile	Phe	Glu	Ser	Glu	Asn	Phe	Phe	Leu	Pro	Gly	Ile	Lys
			180					185					190		
Trp	Asn	Gly	Ile	Leu	Gly	Leu	Ala	Tyr	Ala	Thr	Leu	Ala	Lys	Pro	Ser
		195					200					205			
Ser	Ser	Leu	Glu	Thr	Phe	Phe	Asp	Ser	Leu	Val	Thr	Gln	Ala	Asn	Ile
	210					215					220				
Pro	Asn	Val	Phe	Ser	Met	Gln	Met	Cys	Gly	Ala	Gly	Leu	Pro	Val	Ala
	225				230					235					240

Gly Ser Gly Thr Asn Gly Gly Ser Leu Val Leu Gly Gly Ile Glu Pro  
245 250 255

Ser Leu Tyr Lys Gly Asp Ile Trp Tyr Thr Pro Ile Lys Glu Glu Trp  
260 265 270

Tyr Tyr Gln Ile Glu Ile Leu Lys Leu Glu Ile Gly Gly Gln Ser Leu  
275 280 285

Asn Leu Asp Cys Arg Glu Tyr Asn Ala Asp Lys Ala Ile Val Asp Ser  
290 295 300

Gly Thr Thr Leu Leu Arg Leu Pro Gln Lys Val Phe Asp Ala Val Val  
305 310 315 320

Glu Ala Val Ala Arg Ala Ser Leu Ile Pro Glu Phe Ser Asp Gly Phe  
325 330 335

Trp Thr Gly Ser Gln Leu Ala Cys Trp Thr Asn Ser Glu Thr Pro Trp  
340 345 350

Ser Tyr Phe Pro Lys Ile Ser Ile Tyr Leu Arg Asp Glu Asn Ser Ser  
355 360 365

Arg Ser Phe Arg Ile Thr Ile Leu Pro Gln Leu Tyr Ile Gln Pro Met  
370 375 380

Met Gly Ala Gly Leu Asn Tyr Glu Cys Tyr Arg Phe Gly Ile Ser Pro  
385 390 395 400

Ser Thr Asn Ala Leu Val Ile Gly Ala Thr Val Met Glu Gly Phe Tyr  
405 410 415

Val Ile Phe Asp Arg Ala Gln Lys Arg Val Gly Phe Ala Ala Ser Pro  
420 425 430

Cys Ala Glu Ile Ala Gly Ala Ala Val Ser Glu Ile Ser Gly Pro Phe  
435 440 445

Ser Thr Glu Asp Val Ala Ser Asn Cys Val Pro Ala Gln Ser Leu Ser  
450 455 460

Glu Pro Ile Leu Trp Ile Val Ser Tyr Ala Leu Met Ser Val Cys Gly  
465 470 475 480

Ala Ile Leu Leu Val Leu Ile Val Leu Leu Leu Leu Pro Phe Arg Cys  
485 490 495

Gln Arg Arg Pro Arg Asp Pro Glu Val Val Asn Asp Glu Ser Ser Leu  
500 505 510

Val Arg His Arg Trp Lys  
515

<210> 3

<211> 2070

<212> DNA

<213> Homo sapiens

<400> 3

atggcccaag ccctgccctg gctcctgctg tggatgggcg cgggagtgct gcctgcccac 60

```

ggcaccacagc acggcatccg gctgcccctg cgcagcggcc tgggggggcgc ccccttgggg 120
ctgcggctgc cccgggagac cgacgaagag cccgaggagc ccggccggag gggcagcttt 180
gtggagatgg tggacaacct gaggggcaag tcggggcagg gctactacgt ggagatgacc 240
gtgggacagcc ccccgacagac gctcaacatc ctgggtggata caggcagcag taactttgca 300
gtgggtgctg cccccacccc ctctctgcat cgctactacc agaggcagct gtccagcaca 360
taccgggacc tccggaaggg tgtgtatgtg ccctacaccc agggcaagtg ggaaggggag 420
ctgggcaccg acctggtaag catcccccat ggccccaacg tcaactgtgc tgccaacatt 480
gctgccatca ctgaatcaga caagttcttc atcaacggct ccaactggga aggcattctg 540
gggctggcct atgctgagat tgccaggcct gacgactccc tggagccttt ctttgactct 600
ctggtaaagc agaccacgt tcccaacctc ttctccctgc acctttgtgg tgctggcttc 660
ccctcaacc agtctgaagt gctggcctct gtcggaggga gcatgatcat tggaggtatc 720
gaccactcgc tgtacacagg cagtctctgg tatacaccca tccggcggga gtggtattat 780
gaggtcatca ttgtgcgggt ggagatcaat ggacaggatc tgaaaatgga ctgcaaggag 840
tacaactatg acaagagcat tgtggacagt ggcaccacca accttcgttt gcccaagaaa 900
gtgtttgaag ctgcagtcaa atccatcaag gcagcctcct ccacggagaa gttccctgat 960
ggtttctggc taggagagca gctgggtgtg tggcaagcag gcaccacccc ttggaacatt 1020
ttcccagtc tctcactcta cctaattgggt gaggttacca accagtcctt ccgcatcacc 1080
atccttccgc agcaatacct gcggccagtg gaagatgtgg ccacgtccca agacgactgt 1140
tacaagtgtg ccactctaca gtcattccac ggcaactgta tgggagctgt tatcatggag 1200
ggcttctacg ttgtctttga tcgggcccga aaacgaattg gctttgctgt cagcgtttgc 1260
catgtgcacg atgagttcag gacggcagcg gtggaaggcc cttttgtcac cttggacatg 1320
gaagactgtg gctacaacat tccacagaca gatgagtcaa cctcatgac catagcctat 1380
gtcatggctg ccactctgcg cctcttcatg ctgccactct gcctcatggt gtgtcagtgg 1440
cgctgcctcc gctgcctgcg ccagcagcat gatgactttg ctgatgacat ctccctgctg 1500
aagtgaggag gcccatgggc agaagataga gattcccctg gaccacacct ccgtgggttca 1560
ctttggtcac aagtaggaga cacagatggc acctgtggcc agagcacctc aggaccctcc 1620
ccaccacca aatgcctctg ccttgatgga gaaggaaaag gctggcaagg tgggttccag 1680
ggactgtacc tgtaggaaac agaaaagaga agaaagaagc actctgctgg cgggaatact 1740
cttggtcacc tcaaatttaa gtcgggaaat tctgctgctt gaaacttcag ccctgaacct 1800
ttgtccacca ttcttttaaa ttctccaacc caaagtatct ttcttttctt agtttcagaa 1860
gtactggcat cacacgcagg ttaccttggc gtgtgtccct gtggtaccct ggcagagaag 1920
agaccaagct tgtttccctg ctggccaaag tcagtaggag aggatgcaca gtttgctatt 1980
tgcttttagag acagggactg tataaacaag cctaacattg gtgcaaagat tgcctcttga 2040
attaaaaaaaa aaaaaaaaaa aaaaaaaaaa

```

<210> 4  
 <211> 501  
 <212> PRT  
 <213> Homo sapiens

```

<400> 4
Met Ala Gln Ala Leu Pro Trp Leu Leu Leu Trp Met Gly Ala Gly Val
  1              5              10              15

Leu Pro Ala His Gly Thr Gln His Gly Ile Arg Leu Pro Leu Arg Ser
      20              25              30

Gly Leu Gly Gly Ala Pro Leu Gly Leu Arg Leu Pro Arg Glu Thr Asp
      35              40              45

Glu Glu Pro Glu Glu Pro Gly Arg Arg Gly Ser Phe Val Glu Met Val
      50              55              60

Asp Asn Leu Arg Gly Lys Ser Gly Gln Gly Tyr Tyr Val Glu Met Thr
      65              70              75              80

Val Gly Ser Pro Pro Gln Thr Leu Asn Ile Leu Val Asp Thr Gly Ser
      85              90              95

Ser Asn Phe Ala Val Gly Ala Ala Pro His Pro Phe Leu His Arg Tyr
      100             105             110

```

Tyr	Gln	Arg	Gln	Leu	Ser	Ser	Thr	Tyr	Arg	Asp	Leu	Arg	Lys	Gly	Val
		115					120					125			
Tyr	Val	Pro	Tyr	Thr	Gln	Gly	Lys	Trp	Glu	Gly	Glu	Leu	Gly	Thr	Asp
	130					135					140				
Leu	Val	Ser	Ile	Pro	His	Gly	Pro	Asn	Val	Thr	Val	Arg	Ala	Asn	Ile
145					150					155					160
Ala	Ala	Ile	Thr	Glu	Ser	Asp	Lys	Phe	Phe	Ile	Asn	Gly	Ser	Asn	Trp
				165				170						175	
Glu	Gly	Ile	Leu	Gly	Leu	Ala	Tyr	Ala	Glu	Ile	Ala	Arg	Pro	Asp	Asp
			180					185					190		
Ser	Leu	Glu	Pro	Phe	Phe	Asp	Ser	Leu	Val	Lys	Gln	Thr	His	Val	Pro
		195					200					205			
Asn	Leu	Phe	Ser	Leu	His	Leu	Cys	Gly	Ala	Gly	Phe	Pro	Leu	Asn	Gln
	210					215					220				
Ser	Glu	Val	Leu	Ala	Ser	Val	Gly	Gly	Ser	Met	Ile	Ile	Gly	Gly	Ile
225					230					235					240
Asp	His	Ser	Leu	Tyr	Thr	Gly	Ser	Leu	Trp	Tyr	Thr	Pro	Ile	Arg	Arg
				245					250					255	
Glu	Trp	Tyr	Tyr	Glu	Val	Ile	Ile	Val	Arg	Val	Glu	Ile	Asn	Gly	Gln
			260					265					270		
Asp	Leu	Lys	Met	Asp	Cys	Lys	Glu	Tyr	Asn	Tyr	Asp	Lys	Ser	Ile	Val
		275					280					285			
Asp	Ser	Gly	Thr	Thr	Asn	Leu	Arg	Leu	Pro	Lys	Lys	Val	Phe	Glu	Ala
	290					295					300				
Ala	Val	Lys	Ser	Ile	Lys	Ala	Ala	Ser	Ser	Thr	Glu	Lys	Phe	Pro	Asp
305					310					315					320
Gly	Phe	Trp	Leu	Gly	Glu	Gln	Leu	Val	Cys	Trp	Gln	Ala	Gly	Thr	Thr
				325					330					335	
Pro	Trp	Asn	Ile	Phe	Pro	Val	Ile	Ser	Leu	Tyr	Leu	Met	Gly	Glu	Val
			340					345					350		
Thr	Asn	Gln	Ser	Phe	Arg	Ile	Thr	Ile	Leu	Pro	Gln	Gln	Tyr	Leu	Arg
		355					360					365			
Pro	Val	Glu	Asp	Val	Ala	Thr	Ser	Gln	Asp	Asp	Cys	Tyr	Lys	Phe	Ala
	370					375					380				
Ile	Ser	Gln	Ser	Ser	Thr	Gly	Thr	Val	Met	Gly	Ala	Val	Ile	Met	Glu
385					390					395					400
Gly	Phe	Tyr	Val	Val	Phe	Asp	Arg	Ala	Arg	Lys	Arg	Ile	Gly	Phe	Ala
				405					410					415	
Val	Ser	Ala	Cys	His	Val	His	Asp	Glu	Phe	Arg	Thr	Ala	Ala	Val	Glu
			420					425					430		
Gly	Pro	Phe	Val	Thr	Leu	Asp	Met	Glu	Asp	Cys	Gly	Tyr	Asn	Ile	Pro
		435					440					445			

Gln Thr Asp Glu Ser Thr Leu Met Thr Ile Ala Tyr Val Met Ala Ala  
450 455 460

Ile Cys Ala Leu Phe Met Leu Pro Leu Cys Leu Met Val Cys Gln Trp  
465 470 475 480

Arg Cys Leu Arg Cys Leu Arg Gln Gln His Asp Asp Phe Ala Asp Asp  
485 490 495

Ile Ser Leu Leu Lys  
500

<210> 5

<211> 1977

<212> DNA

<213> Homo sapiens

<400> 5

atggcccaag	ccctgccctg	gctcctgctg	tggatgggag	cgaggagtgc	gcctgcccac	60
ggcaccacgc	acggcatccg	gctgcccctg	cgcagcggcc	tgggggggag	ccccctgggg	120
ctgcggctgc	cccgggagac	cgacgaagag	cccaggagag	ccggccggag	gggcagcttt	180
gtggagatgg	tggacaacct	gaggggcaag	tcggggcagg	gctactacgt	ggagatgacc	240
gtgggcagcc	ccccgcagac	gctcaacatc	ctgggtggata	caggcagcag	taactttgca	300
gtgggtgctg	ccccccaccc	cttcctgcat	cgctactacc	agaggcagct	gtccagcaca	360
taccgggacc	tccggaagg	tgtgtatgtg	ccctacaccc	agggcaagt	ggaaggggag	420
ctgggcaccg	acctggtaag	catcccccat	ggccccaacg	tcactgtgcg	tgccaacatt	480
gctgccatca	ctgaatcaga	caagttcttc	atcaacggct	ccaactggga	aggcatcctg	540
gggctggcct	atgctgagat	tgccaggcct	tgtgggtgctg	gcttccccct	caaccagtct	600
gaagtgtctg	cctctgtcgg	agggagcatg	atcattggag	gtatcgacca	ctcgctgtac	660
acaggcagtc	tctggtatac	acccatccgg	cgaggagtgt	attatgaggt	gatcattgtg	720
cggttgagga	tcaatggaca	ggatctgaaa	atggactgca	aggagtacaa	ctatgacaag	780
agcattgtgg	acagtggcac	caccaacctt	cgtttgccca	agaaagtgtt	tgaagctgca	840
gtcaaataca	tcaaggcagc	ctcctccacg	gagaagtgtt	ctgatgggtt	ctggctagga	900
gagcagctgg	tgtgctggca	agcaggcacc	accccttgga	acattttccc	agtcattctca	960
ctctaccta	tgggtgaggt	taccaaccag	tccttccgca	tcaccatcct	tccgcagcaa	1020
tacctgcggc	cagtgggaaga	tgtggccacg	tcccaagacg	actgttataa	gtttgccatc	1080
tcacagtcac	ccacgggcac	tgttatggga	gctgttatca	tggagggtct	ctacgttggtc	1140
tttgatcggg	cccgaaaacg	aattggcctt	gctgtcagcg	cttgccatgt	gcacgatgag	1200
ttcaggacgg	cagcgggtgga	aggccctttt	gtcaccttgg	acatggaaga	ctgtggctac	1260
aacattccac	agacagatga	gtcaaccctc	atgaccatag	cctatgtcat	ggctgccatc	1320
tgcgccctct	tcattgctgc	actctgcctc	atggtgtgtc	agtggcgctg	cctccgctgc	1380
ctgcgccagc	agcatgatga	ctttgctgat	gacatctccc	tgctgaagt	aggaggccca	1440
tgggcagaag	atagagattc	ccctggacca	cacctccgtg	gttcactttg	gtcacaagta	1500
ggagacacag	atggcacctg	tggccagagc	acctcaggac	cctccccacc	caccaaatac	1560
ctctgccttg	atggagaagg	aaaaggctgg	caagggtggg	tccagggtac	gtacctgtag	1620
gaaacagaaa	agagaagaaa	gaagcactct	gctggcggga	atactcttgg	tcacctcaaa	1680
tttaagtctg	gaaattctgc	tgcttgaaac	ttcagccctg	aacctttgtc	caccattcct	1740
ttaaattctc	caacccaaag	tattcttctt	ttcttagttt	cagaagtact	ggcatcacac	1800
gcaggttacc	ttggcgtgtg	tccctgtggg	accctggcag	agaagagacc	aagcttggtt	1860
ccctgctggc	caaagtcagt	aggagaggat	gcacagtttg	ctatttgctt	tagagacagg	1920
gactgtataa	acaagcctaa	cattggtgca	aagattgcct	cttgaaaaaa	aaaaaaa	1977

<210> 6

<211> 476

<212> PRT

<213> Homo sapiens

<400> 6

Met Ala Gln Ala Leu Pro Trp Leu Leu Leu Trp Met Gly Ala Gly Val  
1 5 10 15

Leu	Pro	Ala	His	Gly	Thr	Gln	His	Gly	Ile	Arg	Leu	Pro	Leu	Arg	Ser	
			20					25					30			
Gly	Leu	Gly	Gly	Ala	Pro	Leu	Gly	Leu	Arg	Leu	Pro	Arg	Glu	Thr	Asp	
		35					40					45				
Glu	Glu	Pro	Glu	Glu	Pro	Gly	Arg	Arg	Gly	Ser	Phe	Val	Glu	Met	Val	
	50					55					60					
Asp	Asn	Leu	Arg	Gly	Lys	Ser	Gly	Gln	Gly	Tyr	Tyr	Val	Glu	Met	Thr	
65					70					75					80	
Val	Gly	Ser	Pro	Pro	Gln	Thr	Leu	Asn	Ile	Leu	Val	Asp	Thr	Gly	Ser	
				85					90					95		
Ser	Asn	Phe	Ala	Val	Gly	Ala	Ala	Pro	His	Pro	Phe	Leu	His	Arg	Tyr	
			100					105					110			
Tyr	Gln	Arg	Gln	Leu	Ser	Ser	Thr	Tyr	Arg	Asp	Leu	Arg	Lys	Gly	Val	
	115						120					125				
Tyr	Val	Pro	Tyr	Thr	Gln	Gly	Lys	Trp	Glu	Gly	Glu	Leu	Gly	Thr	Asp	
	130					135					140					
Leu	Val	Ser	Ile	Pro	His	Gly	Pro	Asn	Val	Thr	Val	Arg	Ala	Asn	Ile	
145					150					155					160	
Ala	Ala	Ile	Thr	Glu	Ser	Asp	Lys	Phe	Phe	Ile	Asn	Gly	Ser	Asn	Trp	
				165				170						175		
Glu	Gly	Ile	Leu	Gly	Leu	Ala	Tyr	Ala	Glu	Ile	Ala	Arg	Leu	Cys	Gly	
			180					185					190			
Ala	Gly	Phe	Pro	Leu	Asn	Gln	Ser	Glu	Val	Leu	Ala	Ser	Val	Gly	Gly	
		195					200					205				
Ser	Met	Ile	Ile	Gly	Gly	Ile	Asp	His	Ser	Leu	Tyr	Thr	Gly	Ser	Leu	
	210					215					220					
Trp	Tyr	Thr	Pro	Ile	Arg	Arg	Glu	Trp	Tyr	Tyr	Glu	Val	Ile	Ile	Val	
225					230					235					240	
Arg	Val	Glu	Ile	Asn	Gly	Gln	Asp	Leu	Lys	Met	Asp	Cys	Lys	Glu	Tyr	
				245					250					255		
Asn	Tyr	Asp	Lys	Ser	Ile	Val	Asp	Ser	Gly	Thr	Thr	Asn	Leu	Arg	Leu	
			260					265					270			
Pro	Lys	Lys	Val	Phe	Glu	Ala	Ala	Val	Lys	Ser	Ile	Lys	Ala	Ala	Ser	
		275					280					285				
Ser	Thr	Glu	Lys	Phe	Pro	Asp	Gly	Phe	Trp	Leu	Gly	Glu	Gln	Leu	Val	
	290					295					300					
Cys	Trp	Gln	Ala	Gly	Thr	Thr	Pro	Trp	Asn	Ile	Phe	Pro	Val	Ile	Ser	
305					310					315					320	
Leu	Tyr	Leu	Met	Gly	Glu	Val	Thr	Asn	Gln	Ser	Phe	Arg	Ile	Thr	Ile	
				325					330					335		
Leu	Pro	Gln	Gln	Tyr	Leu	Arg	Pro	Val	Glu	Asp	Val	Ala	Thr	Ser	Gln	
			340					345					350			



His Asp Asp Phe Ala Asp Asp Ile Ser Leu Leu Lys  
465 470 475

```
<210> 7
<211> 2043
<212> DNA
<213> Mus musculus
```

<400> 7						
atggcccccag	cgetgcactg	gctcctgcta	tgggtgggct	cggaatgct	gcctgccag	60
ggaacccatc	tggcatccg	gctgccctt	cgcagcggc	tggcagggcc	accctgggc	120
ctgaggctgc	cccgggagac	tgacgaggaa	tgggaggagc	ctggccggag	aggcagcttt	180
gtggagatgg	tggacaacct	gaggggaaag	tccggccagg	gctactatgt	ggagatgacc	240
gtaggcagcc	ccccacagac	gctcaacatc	ctggtggaca	cgggcagtag	taactttgca	300
gtgggggctg	ccccacaccc	tttcctgcat	cgctactacc	agaggcagct	gtccagcaca	360
tatcgagacc	tccgaaaggg	tgtgtatgtg	ccctacaccc	agggcaagtg	ggaggggggaa	420
ctgggcaccg	acctggtgag	catccctcat	ggccccaacg	tactgtgcg	tgccaacatt	480
gctgccatca	ctgaatcgga	caagtcttc	atcaatggtt	ccaactggga	gggcatccta	540
gggctggcct	atgctgagat	tgccaggccc	gacgactctt	tggagccctt	ctttgactcc	600
ctggtgaagc	agaccacat	tcccaacatc	ttttccctgc	agctctgtgg	cgctggcttc	660
cccctcaacc	agaccgaggc	actggcctcg	gtgggaggga	gcatgatcat	tgggtggtatc	720
gaccactcgc	tatacacggg	cagtctctgg	tacacaccca	tccggcggga	gtggtattat	780
gaagtgatca	ttgtacgtgt	ggaaatcaat	ggtcaagatc	tcaagatgga	ctgcaaggag	840
tacaactacg	acaagagcat	tgtggacagt	gggaccacca	accttcgctt	gccaagaaa	900
gtat ttgaag	ctgccgtcaa	gtccatcaag	gcagcctcct	cgacggagaa	gttcccggat	960
ggctttttggc	taggggagca	gctggtgtgc	tggcaagcag	gcacgacccc	ttggaacatt	1020
ttcccagtc	tttcacttta	cctcatgggt	gaagtcacca	atcagtcctt	cgcatacc	1080
atccttcctc	agcaatacct	acggccgggtg	gaggacgtgg	ccacgtccca	agacgactgt	1140
tacaagttcg	ctgtctcaca	gtcatccacg	ggcactgtta	tgggagccgt	catcatggaa	1200
ggtttctatg	tcgctctcga	tcgagcccga	aagcgaattg	gctttgctgt	cagcgcttgc	1260
catgtgcacg	atgagttcag	gacggcggca	gtggaaggtc	cgtttgttac	ggcagacatg	1320
gaagactgtg	gctacaacat	tccccagaca	gatgagtcaa	cacttatgac	catagcctat	1380
gtcatggcgg	ccatctgcgc	cctcttcatg	ttgccactct	gcctcatggt	atgtcagtggt	1440
cgctgcctgc	gttgcctgcg	ccaccagcac	gatgactttg	ctgatgacat	ctccctgctc	1500
aagtaaggag	gctcgtgggc	agatgatgga	gacgcccctg	gaccacatct	gggtggttcc	1560
ctttggtcac	atgagttgga	gctatggatg	gtacctgtgg	ccagagcacc	tcaggaccct	1620
caccaacctg	ccaatgcttc	tggcgtgaca	gaacagagaa	atcagggaag	ctggattaca	1680
gggcttgcac	ctgtaggaca	caggagaggg	aaggaagcag	cgttctgggtg	gcaggaatat	1740
ccttaggcac	cacaaacttg	agttggaaat	tttgctgctt	gaagcttcag	ccctgaccct	1800
ctgcccgaca	tcctttagag	tctccaacct	aaaqtattct	ttatgtcctt	ccaqaaqtac	1860



tggcgtcata ctcaggctac ccggcatgtg tccctgtggt accctggcag agaaagggcc 1920  
 aatctcattc cctgctggcc aaagtcagca gaagaagggt aagtttgcca gttgcttttag 1980  
 tgatagggac tgcagactca agcctacact ggtacaaaga ctgcgtcttg agataaacia 2040  
 gaa 2043

<210> 8  
 <211> 501  
 <212> PRT  
 <213> Mus musculus

<400> 8  
 Met Ala Pro Ala Leu His Trp Leu Leu Leu Trp Val Gly Ser Gly Met  
 1 5 10 15  
 Leu Pro Ala Gln Gly Thr His Leu Gly Ile Arg Leu Pro Leu Arg Ser  
 20 25 30  
 Gly Leu Ala Gly Pro Pro Leu Gly Leu Arg Leu Pro Arg Glu Thr Asp  
 35 40 45  
 Glu Glu Ser Glu Glu Pro Gly Arg Arg Gly Ser Phe Val Glu Met Val  
 50 55 60  
 Asp Asn Leu Arg Gly Lys Ser Gly Gln Gly Tyr Tyr Val Glu Met Thr  
 65 70 75 80  
 Val Gly Ser Pro Pro Gln Thr Leu Asn Ile Leu Val Asp Thr Gly Ser  
 85 90 95  
 Ser Asn Phe Ala Val Gly Ala Ala Pro His Pro Phe Leu His Arg Tyr  
 100 105 110  
 Tyr Gln Arg Gln Leu Ser Ser Thr Tyr Arg Asp Leu Arg Lys Gly Val  
 115 120 125  
 Tyr Val Pro Tyr Thr Gln Gly Lys Trp Glu Gly Glu Leu Gly Thr Asp  
 130 135 140  
 Leu Val Ser Ile Pro His Gly Pro Asn Val Thr Val Arg Ala Asn Ile  
 145 150 155 160  
 Ala Ala Ile Thr Glu Ser Asp Lys Phe Phe Ile Asn Gly Ser Asn Trp  
 165 170 175  
 Glu Gly Ile Leu Gly Leu Ala Tyr Ala Glu Ile Ala Arg Pro Asp Asp  
 180 185 190  
 Ser Leu Glu Pro Phe Phe Asp Ser Leu Val Lys Gln Thr His Ile Pro  
 195 200 205  
 Asn Ile Phe Ser Leu Gln Leu Cys Gly Ala Gly Phe Pro Leu Asn Gln  
 210 215 220  
 Thr Glu Ala Leu Ala Ser Val Gly Gly Ser Met Ile Ile Gly Gly Ile  
 225 230 235 240  
 Asp His Ser Leu Tyr Thr Gly Ser Leu Trp Tyr Thr Pro Ile Arg Arg  
 245 250 255  
 Glu Trp Tyr Tyr Glu Val Ile Ile Val Arg Val Glu Ile Asn Gly Gln  
 260 265 270

1  
 2  
 3  
 4  
 5  
 6  
 7  
 8  
 9  
 10  
 11  
 12  
 13  
 14  
 15  
 16  
 17  
 18  
 19  
 20  
 21  
 22  
 23  
 24  
 25  
 26  
 27  
 28  
 29  
 30  
 31  
 32  
 33  
 34  
 35  
 36  
 37  
 38  
 39  
 40  
 41  
 42  
 43  
 44  
 45  
 46  
 47  
 48  
 49  
 50  
 51  
 52  
 53  
 54  
 55  
 56  
 57  
 58  
 59  
 60  
 61  
 62  
 63  
 64  
 65  
 66  
 67  
 68  
 69  
 70  
 71  
 72  
 73  
 74  
 75  
 76  
 77  
 78  
 79  
 80  
 81  
 82  
 83  
 84  
 85  
 86  
 87  
 88  
 89  
 90  
 91  
 92  
 93  
 94  
 95  
 96  
 97  
 98  
 99  
 100

Asp Leu Lys Met Asp Cys Lys Glu Tyr Asn Tyr Asp Lys Ser Ile Val  
275 280 285

Asp Ser Gly Thr Thr Asn Leu Arg Leu Pro Lys Lys Val Phe Glu Ala  
290 295 300

Ala Val Lys Ser Ile Lys Ala Ala Ser Ser Thr Glu Lys Phe Pro Asp  
305 310 315 320

Gly Phe Trp Leu Gly Glu Gln Leu Val Cys Trp Gln Ala Gly Thr Thr  
325 330 335

Pro Trp Asn Ile Phe Pro Val Ile Ser Leu Tyr Leu Met Gly Glu Val  
340 345 350

Thr Asn Gln Ser Phe Arg Ile Thr Ile Leu Pro Gln Gln Tyr Leu Arg  
355 360 365

Pro Val Glu Asp Val Ala Thr Ser Gln Asp Asp Cys Tyr Lys Phe Ala  
370 375 380

Val Ser Gln Ser Ser Thr Gly Thr Val Met Gly Ala Val Ile Met Glu  
385 390 395 400

Gly Phe Tyr Val Val Phe Asp Arg Ala Arg Lys Arg Ile Gly Phe Ala  
405 410 415

Val Ser Ala Cys His Val His Asp Glu Phe Arg Thr Ala Ala Val Glu  
420 425 430

Gly Pro Phe Val Thr Ala Asp Met Glu Asp Cys Gly Tyr Asn Ile Pro  
435 440 445

Gln Thr Asp Glu Ser Thr Leu Met Thr Ile Ala Tyr Val Met Ala Ala  
450 455 460

Ile Cys Ala Leu Phe Met Leu Pro Leu Cys Leu Met Val Cys Gln Trp  
465 470 475 480

Arg Cys Leu Arg Cys Leu Arg His Gln His Asp Asp Phe Ala Asp Asp  
485 490 495

Ile Ser Leu Leu Lys  
500

<210> 9  
<211> 2088  
<212> DNA  
<213> Homo sapiens

<400> 9  
atgctgcccg gtttggcact gctcctgctg gccgcctgga cggctcgggc gctggaggta 60  
cccactgatg gtaatgctgg cctgctggct gaaccccaga ttgccatgtt ctgtggcaga 120  
ctgaacatgc acatgaatgt ccagaatggg aagtgggatt cagatccatc agggaccaa 180  
acctgcattg ataccaagga aggcattcctg cagtattgcc aagaagtcta ccctgaactg 240  
cagatcacca atgtggtaga agccaaccaa ccagtaccca tccagaactg gtgcaagcgg 300  
ggccgcaagc agtgcaagac ccatccccac tttgtgattc cctaccgctg cttagtgtgt 360  
gagtttgtaa gtgatgccct tctcgttcct gacaagtgc aattcttaca ccaggagagg 420  
atggatgttt gcgaaactca tcttcactgg cacaccgtcg ccaaagagac atgcagtgag 480  
aagagtacca acttgcattg ctacggcatg ttgctgccct gcggaattga caagttccga 540  
ggggtagagt ttgtgtgttg cccactggct gaagaaagtg acaatgtgga ttctgctgat 600

```

gcggaggagg atgactcgga tgtctggtgg ggcggagcag acacagacta tgcagatggg 660
agtgaagaca aagtagtaga agtagcagag gaggaagaag tggctgaggt ggaagaagaa 720
gaagccgatg atgacgagga cgatgaggat ggtgatgagg tagaggaaga ggctgaggaa 780
ccctacgaag aagccacaga gagaaccacc agcattgccca ccaccaccac caccaccaca 840
gagtctgtgg aagaggtggt tgcagttcct acaacagcag ccagtacccc tgatgccggt 900
gacaagtatc tgcagacacc tggggatgag aatgaacatg cccatttcca gaaagccaaa 960
gagaggcttg aggccaagca ccgagagaga atgtcccagg tcatgagaga atgggaagag 1020
gcagaacgtc aagcaaagaa cttgcctaaa gctgataaga aggcagttat ccagcatttc 1080
caggagaaag tggaatcttt ggaacaggaa gcagccaacg agagacagca gctgggtggag 1140
acacacatgg ccagagtgga agccatgctc aatgaccgcc gccgcctggc cctggagaac 1200
tacatcaccg ctctgcaggc tgttcctcct cggcctcgtc acgtgttcaa tatgctaaag 1260
aagtatgtcc gcgcagaaca gaaggacaga cagcacaccc taaagcattt cgagcatgtg 1320
cgcatgggtg atcccaagaa agccgctcag atccggtccc aggttatgac acacctccgt 1380
gtgatttatg agcgcacatgaa tcagtctctc tccctgctct acaacgtgcc tgcagtggcc 1440
gaggagattc aggatgaagt tgatgagctg cttcagaaag agcaaaacta ttcagatgac 1500
gtcttgacca acatgattag tgaaccaagg atcagttacg gaaacgatgc tctcatgcca 1560
tctttgaccg aaacgaaaac caccgtggag ctcttccccg tgaatggaga gttcagcctg 1620
gacgatctcc agccgtggca ttcttttggg gctgactctg tgccagccaa cacagaaaac 1680
gaagttgagc ctgttgatgc ccgccctgct gccgaccgag gactgaccac tgcaccaggt 1740
tctgggttga caaatatcaa gacggaggag atctctgaag tgaagatgga tgcagaattc 1800
cgacatgact caggatatga agttcatcat caaaaattgg tgttctttgc agaagatgtg 1860
ggttcaaaca aaggtgcaat cattggactc atgggtgggcg gtgttgatcat agcgacagtg 1920
atcgatcatc ccttggtgat gctgaagaag aaacagtaca catccattca tcatggtgtg 1980
gtggaggttg acgccgctgt caccacagag gagcgccacc tgtccaagat gcagcagaac 2040
ggctacgaaa atccaaccta caagttcttt gagcagatgc agaactag 2088

```

<210> 10  
 <211> 695  
 <212> PRT  
 <213> Homo sapiens

<400> 10

Met	Leu	Pro	Gly	Leu	Ala	Leu	Leu	Leu	Leu	Ala	Ala	Trp	Thr	Ala	Arg
1				5					10					15	
Ala	Leu	Glu	Val	Pro	Thr	Asp	Gly	Asn	Ala	Gly	Leu	Leu	Ala	Glu	Pro
			20					25					30		
Gln	Ile	Ala	Met	Phe	Cys	Gly	Arg	Leu	Asn	Met	His	Met	Asn	Val	Gln
		35					40					45			
Asn	Gly	Lys	Trp	Asp	Ser	Asp	Pro	Ser	Gly	Thr	Lys	Thr	Cys	Ile	Asp
	50					55					60				
Thr	Lys	Glu	Gly	Ile	Leu	Gln	Tyr	Cys	Gln	Glu	Val	Tyr	Pro	Glu	Leu
65					70					75				80	
Gln	Ile	Thr	Asn	Val	Val	Glu	Ala	Asn	Gln	Pro	Val	Thr	Ile	Gln	Asn
			85						90					95	
Trp	Cys	Lys	Arg	Gly	Arg	Lys	Gln	Cys	Lys	Thr	His	Pro	His	Phe	Val
			100					105					110		
Ile	Pro	Tyr	Arg	Cys	Leu	Val	Gly	Glu	Phe	Val	Ser	Asp	Ala	Leu	Leu
		115					120					125			
Val	Pro	Asp	Lys	Cys	Lys	Phe	Leu	His	Gln	Glu	Arg	Met	Asp	Val	Cys
		130				135					140				
Glu	Thr	His	Leu	His	Trp	His	Thr	Val	Ala	Lys	Glu	Thr	Cys	Ser	Glu
145					150					155					160



Tyr Ser Asp Asp Val Leu Ala Asn Met Ile Ser Glu Pro Arg Ile Ser  
500 505 510

Tyr Gly Asn Asp Ala Leu Met Pro Ser Leu Thr Glu Thr Lys Thr Thr  
515 520 525

Val Glu Leu Leu Pro Val Asn Gly Glu Phe Ser Leu Asp Asp Leu Gln  
530 535 540

Pro Trp His Ser Phe Gly Ala Asp Ser Val Pro Ala Asn Thr Glu Asn  
545 550 555 560

Glu Val Glu Pro Val Asp Ala Arg Pro Ala Ala Asp Arg Gly Leu Thr  
565 570 575

Thr Arg Pro Gly Ser Gly Leu Thr Asn Ile Lys Thr Glu Glu Ile Ser  
580 585 590

Glu Val Lys Met Asp Ala Glu Phe Arg His Asp Ser Gly Tyr Glu Val  
595 600 605

His His Gln Lys Leu Val Phe Phe Ala Glu Asp Val Gly Ser Asn Lys  
610 615 620

Gly Ala Ile Ile Gly Leu Met Val Gly Gly Val Val Ile Ala Thr Val  
625 630 635 640

Ile Val Ile Thr Leu Val Met Leu Lys Lys Lys Gln Tyr Thr Ser Ile  
645 650 655

His His Gly Val Val Glu Val Asp Ala Ala Val Thr Pro Glu Glu Arg  
660 665 670

His Leu Ser Lys Met Gln Gln Asn Gly Tyr Glu Asn Pro Thr Tyr Lys  
675 680 685

Phe Phe Glu Gln Met Gln Asn  
690 695

<210> 11  
<211> 2088  
<212> DNA  
<213> Homo sapiens

<400> 11  
atgctgcccg gtttggcact gctcctgctg gccgcctgga cggctcgggc gctggaggta 60  
cccactgatg gtaatgctgg cctgctggct gaaccccaga ttgccatgtt ctgtggcaga 120  
ctgaacatgc acatgaatgt ccagaatggg aagtgggatt cagatccatc agggaccaa 180  
acctgcattg ataccaagga aggcatacctg cagtattgcc aagaagtcta ccctgaactg 240  
cagatcacca atgtggtaga agccaaccaa ccagtgaacca tccagaactg gtgcaagcgg 300  
ggccgcaagc agtgcaagac ccatccccac tttgtgattc cctaccgctg cttagttggt 360  
gagtttgtaa gtgatgccct tctcgttcct gacaagtgca aattcttaca ccaggagagg 420  
atggatgttt gcgaaactca tcttcactgg cacaccgtcg ccaaagagac atgcagtgag 480  
aagagtacca acttgcatga ctacggcatg ttgctgccct gcggaattga caagttccga 540  
ggggtagagt ttgtgtgttg cccactggct gaagaaagtg acaatgtgga ttctgctgat 600  
gcggaggagg atgactcgga tgtctggtgg ggccggagcag acacagacta tgcagatggg 660  
agtgaagaca aagtagtaga agtagcagag gaggaagaag tggctgaggt ggaagaagaa 720  
gaagccgatg atgacgagga cgatgaggat ggtgatgagg tagaggaaga ggctgaggaa 780  
ccctacgaag aagccacaga gagaaccacc agcattgcca ccaccaccac caccaccaca 840  
gagtctgtgg aagaggtggt tcgagttcct acaacagcag ccagtacccc tgatgccggt 900  
gacaagtatc tcgagacacc tgggggatgag aatgaacatg cccatttcca gaaagccaaa 960

```
<210> .12
<211> 695
<212> PRT
<213> Homo sapiens
```

<400> 12															
Met	Leu	Pro	Gly	Leu	Ala	Leu	Leu	Leu	Leu	Ala	Ala	Trp	Thr	Ala	Arg
1				5					10					15	
Ala	Leu	Glu	Val	Pro	Thr	Asp	Gly	Asn	Ala	Gly	Leu	Leu	Ala	Glu	Pro
			20					25					30		
Gln	Ile	Ala	Met	Phe	Cys	Gly	Arg	Leu	Asn	Met	His	Met	Asn	Val	Gln
		35					40					45			
Asn	Gly	Lys	Trp	Asp	Ser	Asp	Pro	Ser	Gly	Thr	Lys	Thr	Cys	Ile	Asp
	50					55					60				
Thr	Lys	Glu	Gly	Ile	Leu	Gln	Tyr	Cys	Gln	Glu	Val	Tyr	Pro	Glu	Leu
65					70					75					80
Gln	Ile	Thr	Asn	Val	Val	Glu	Ala	Asn	Gln	Pro	Val	Thr	Ile	Gln	Asn
				85					90					95	
Trp	Cys	Lys	Arg	Gly	Arg	Lys	Gln	Cys	Lys	Thr	His	Pro	His	Phe	Val
			100					105					110		
Ile	Pro	Tyr	Arg	Cys	Leu	Val	Gly	Glu	Phe	Val	Ser	Asp	Ala	Leu	Leu
		115					120					125			
Val	Pro	Asp	Lys	Cys	Lys	Phe	Leu	His	Gln	Glu	Arg	Met	Asp	Val	Cys
	130					135					140				
Glu	Thr	His	Leu	His	Trp	His	Thr	Val	Ala	Lys	Glu	Thr	Cys	Ser	Glu
145					150					155					160
Lys	Ser	Thr	Asn	Leu	His	Asp	Tyr	Gly	Met	Leu	Leu	Pro	Cys	Gly	Ile
				165					170					175	
Asp	Lys	Phe	Arg	Gly	Val	Glu	Phe	Val	Cys	Cys	Pro	Leu	Ala	Glu	Glu
			180					185					190		

Ser	Asp	Asn	Val	Asp	Ser	Ala	Asp	Ala	Glu	Glu	Asp	Asp	Ser	Asp	Val
		195					200					205			
Trp	Trp	Gly	Gly	Ala	Asp	Thr	Asp	Tyr	Ala	Asp	Gly	Ser	Glu	Asp	Lys
	210					215					220				
Val	Val	Glu	Val	Ala	Glu	Glu	Glu	Glu	Val	Ala	Glu	Val	Glu	Glu	Glu
225					230					235					240
Glu	Ala	Asp	Asp	Asp	Glu	Asp	Asp	Glu	Asp	Gly	Asp	Glu	Val	Glu	Glu
				245					250					255	
Glu	Ala	Glu	Glu	Pro	Tyr	Glu	Glu	Ala	Thr	Glu	Arg	Thr	Thr	Ser	Ile
			260					265					270		
Ala	Thr	Thr	Thr	Thr	Thr	Thr	Thr	Glu	Ser	Val	Glu	Glu	Val	Val	Arg
		275					280					285			
Val	Pro	Thr	Thr	Ala	Ala	Ser	Thr	Pro	Asp	Ala	Val	Asp	Lys	Tyr	Leu
	290					295					300				
Glu	Thr	Pro	Gly	Asp	Glu	Asn	Glu	His	Ala	His	Phe	Gln	Lys	Ala	Lys
305					310					315					320
Glu	Arg	Leu	Glu	Ala	Lys	His	Arg	Glu	Arg	Met	Ser	Gln	Val	Met	Arg
				325					330					335	
Glu	Trp	Glu	Glu	Ala	Glu	Arg	Gln	Ala	Lys	Asn	Leu	Pro	Lys	Ala	Asp
			340					345					350		
Lys	Lys	Ala	Val	Ile	Gln	His	Phe	Gln	Glu	Lys	Val	Glu	Ser	Leu	Glu
		355					360					365			
Gln	Glu	Ala	Ala	Asn	Glu	Arg	Gln	Gln	Leu	Val	Glu	Thr	His	Met	Ala
	370					375					380				
Arg	Val	Glu	Ala	Met	Leu	Asn	Asp	Arg	Arg	Arg	Leu	Ala	Leu	Glu	Asn
385					390					395					400
Tyr	Ile	Thr	Ala	Leu	Gln	Ala	Val	Pro	Pro	Arg	Pro	Arg	His	Val	Phe
				405					410					415	
Asn	Met	Leu	Lys	Lys	Tyr	Val	Arg	Ala	Glu	Gln	Lys	Asp	Arg	Gln	His
			420					425					430		
Thr	Leu	Lys	His	Phe	Glu	His	Val	Arg	Met	Val	Asp	Pro	Lys	Lys	Ala
		435					440					445			
Ala	Gln	Ile	Arg	Ser	Gln	Val	Met	Thr	His	Leu	Arg	Val	Ile	Tyr	Glu
	450					455					460				
Arg	Met	Asn	Gln	Ser	Leu	Ser	Leu	Leu	Tyr	Asn	Val	Pro	Ala	Val	Ala
465					470					475					480
Glu	Glu	Ile	Gln	Asp	Glu	Val	Asp	Glu	Leu	Leu	Gln	Lys	Glu	Gln	Asn
				485					490					495	
Tyr	Ser	Asp	Asp	Val	Leu	Ala	Asn	Met	Ile	Ser	Glu	Pro	Arg	Ile	Ser
			500					505					510		



Tyr Gly Asn Asp Ala Leu Met Pro Ser Leu Thr Glu Thr Lys Thr Thr  
515 520 525

Val Glu Leu Leu Pro Val Asn Gly Glu Phe Ser Leu Asp Asp Leu Gln  
530 535 540

Pro Trp His Ser Phe Gly Ala Asp Ser Val Pro Ala Asn Thr Glu Asn  
545 550 555 560

Glu Val Glu Pro Val Asp Ala Arg Pro Ala Ala Asp Arg Gly Leu Thr  
565 570 575

Thr Arg Pro Gly Ser Gly Leu Thr Asn Ile Lys Thr Glu Glu Ile Ser  
580 585 590

Glu Val Asn Leu Asp Ala Glu Phe Arg His Asp Ser Gly Tyr Glu Val  
595 600 605

His His Gln Lys Leu Val Phe Phe Ala Glu Asp Val Gly Ser Asn Lys  
610 615 620

Gly Ala Ile Ile Gly Leu Met Val Gly Gly Val Val Ile Ala Thr Val  
625 630 635 640

Ile Val Ile Thr Leu Val Met Leu Lys Lys Lys Gln Tyr Thr Ser Ile  
645 650 655

His His Gly Val Val Glu Val Asp Ala Ala Val Thr Pro Glu Glu Arg  
660 665 670

His Leu Ser Lys Met Gln Gln Asn Gly Tyr Glu Asn Pro Thr Tyr Lys  
675 680 685

Phe Phe Glu Gln Met Gln Asn  
690 695

<210> 13  
<211> 2088  
<212> DNA  
<213> Homo sapiens

<400> 13  
atgctgccccg gtttggcact gctcctgctg gccgcctgga cggctcgggc gctggaggta 60  
cccactgatg gtaatgctgg cctgctggct gaaccccaga ttgccatgtt ctgtggcaga 120  
ctgaacatgc acatgaatgt ccagaatggg aagtgggatt cagatccatc agggaccaa 180  
acctgcattg ataccaagga aggcatacctg cagtattgcc aagaagtcta ccctgaactg 240  
cagatcacca atgtggtaga agccaaccaa ccagtaccca tccagaactg gtgcaagcgg 300  
ggccgcaagc agtgcaagac ccatccccac tttgtgattc cctaccgctg cttagttggt 360  
gagtttgtaa gtgatgcct tctcgttcct gacaagtgca aattcttaca ccaggagagg 420  
atggatgttt gcgaaactca tcttcactgg cacaccgtcg ccaaagagac atgcagtgag 480  
aagagtacca acttgcatga ctacggcatg ttgctgccct gcggaattga caagttccga 540  
ggggtagagt ttgtgtgttg cccactggct gaagaaagtg acaatgtgga ttctgctgat 600  
gcggaggagg atgactcgga tgtctgggtg ggccggagcag acacagacta tgcagatggg 660  
agtgaagaca aagtagtaga agtagcagag gaggaagaag tggctgaggt ggaagaagaa 720  
gaagccgatg atgacgagga cgatgaggat ggtgatgagg tagaggaaga ggctgaggaa 780  
ccctacgaag aagccacaga gagaaccacc agcattgcca ccaccaccac caccaccaca 840  
gagtctgtgg aagaggtggt tcgagttcct acaacagcag ccagtacccc tgatgccgtt 900  
gacaagtatc tcgagacacc tggggatgag aatgaacatg cccatttcca gaaagccaaa 960  
gagaggcttg aggccaagca ccgagagaga atgtcccagg tcatgagaga atgggaagag 1020  
gcagaacgtc aagcaaagaa cttgcctaaa gctgataaga aggcagttat ccagcatttc 1080  
caggagaaaag tggaaatctt ggaacaggaa gcagccaacg agagacagca gctggtggag 1140  
acacacatgg ccagagtgga agccatgctc aatgaccgcc gccgcctggc cctggagaac 1200

```

tacatcacccg ctctgcaggc tggttcctcct eggcctcgtc acgtgttcaa tatgctaaag 1260
aagtatgtcc gcgcagaaca gaaggacaga cagcacaccc taaagcattt cgagcatgtg 1320
cgcatgggtgg atcccaagaa agccgctcag atccgggtccc aggttatgac acacctccgt 1380
gtgatttatg agcgcataaa tcagtctctc tccctgctct acaacgtgcc tgcagtggcc 1440
gaggagattc aggatgaagt tgatgagctg cttcagaaag agcaaaaacta ttcagatgac 1500
gtcttggtcca acatgattag tgaaccaagg atcagttacg gaaacgatgc tctcatgcca 1560
tctttgaccg aaacgaaaac caccgtggag ctcttcccg tgaatggaga gttcagcctg 1620
gacgatctcc agccgtggca ttcttttggg gctgactctg tgccagccaa cacagaaaac 1680
gaagttgagc ctggtgatgc ccgccctgct gccgaccgag gactgaccac tgcaccaggt 1740
tctgggttga caaatatcaa gacggaggag atctctgaag tgaagatgga tgcagaattc 1800
cgacatgact caggatatga agttcatcat caaaaattgg tgttctttgc agaagatgtg 1860
ggttcaaaca aaggtgcaat cattggactc atggtgggcg gtgttgtcat agcgacagt 1920
atcttcatca ccttggtgat gctgaagaag aaacagtaca catccattca tcatggtgtg 1980
gtggagggtg acgccgctgt caccacagag gagcgccacc tgtccaagat gcagcagaac 2040
ggctacgaaa atccaaccta caagttcttt gagcagatgc agaactag 2088

```

<210> 14  
 <211> 695  
 <212> PRT  
 <213> Homo sapiens

<400> 14

Met	Leu	Pro	Gly	Leu	Ala	Leu	Leu	Leu	Leu	Ala	Ala	Trp	Thr	Ala	Arg
1				5				10						15	
Ala	Leu	Glu	Val	Pro	Thr	Asp	Gly	Asn	Ala	Gly	Leu	Leu	Ala	Glu	Pro
			20					25					30		
Gln	Ile	Ala	Met	Phe	Cys	Gly	Arg	Leu	Asn	Met	His	Met	Asn	Val	Gln
		35					40					45			
Asn	Gly	Lys	Trp	Asp	Ser	Asp	Pro	Ser	Gly	Thr	Lys	Thr	Cys	Ile	Asp
	50					55					60				
Thr	Lys	Glu	Gly	Ile	Leu	Gln	Tyr	Cys	Gln	Glu	Val	Tyr	Pro	Glu	Leu
65					70					75				80	
Gln	Ile	Thr	Asn	Val	Val	Glu	Ala	Asn	Gln	Pro	Val	Thr	Ile	Gln	Asn
			85					90						95	
Trp	Cys	Lys	Arg	Gly	Arg	Lys	Gln	Cys	Lys	Thr	His	Pro	His	Phe	Val
			100					105					110		
Ile	Pro	Tyr	Arg	Cys	Leu	Val	Gly	Glu	Phe	Val	Ser	Asp	Ala	Leu	Leu
		115					120					125			
Val	Pro	Asp	Lys	Cys	Lys	Phe	Leu	His	Gln	Glu	Arg	Met	Asp	Val	Cys
	130					135					140				
Glu	Thr	His	Leu	His	Trp	His	Thr	Val	Ala	Lys	Glu	Thr	Cys	Ser	Glu
145					150					155					160
Lys	Ser	Thr	Asn	Leu	His	Asp	Tyr	Gly	Met	Leu	Leu	Pro	Cys	Gly	Ile
			165					170						175	
Asp	Lys	Phe	Arg	Gly	Val	Glu	Phe	Val	Cys	Cys	Pro	Leu	Ala	Glu	Glu
			180					185					190		
Ser	Asp	Asn	Val	Asp	Ser	Ala	Asp	Ala	Glu	Glu	Asp	Asp	Ser	Asp	Val
		195					200					205			

Trp	Trp	Gly	Gly	Ala	Asp	Thr	Asp	Tyr	Ala	Asp	Gly	Ser	Glu	Asp	Lys
	210					215					220				
Val	Val	Glu	Val	Ala	Glu	Glu	Glu	Glu	Val	Ala	Glu	Val	Glu	Glu	Glu
225					230					235					240
Glu	Ala	Asp	Asp	Asp	Glu	Asp	Asp	Glu	Asp	Gly	Asp	Glu	Val	Glu	Glu
				245					250					255	
Glu	Ala	Glu	Glu	Pro	Tyr	Glu	Glu	Ala	Thr	Glu	Arg	Thr	Thr	Ser	Ile
			260					265					270		
Ala	Thr	Thr	Thr	Thr	Thr	Thr	Thr	Glu	Ser	Val	Glu	Glu	Val	Val	Arg
		275					280					285			
Val	Pro	Thr	Thr	Ala	Ala	Ser	Thr	Pro	Asp	Ala	Val	Asp	Lys	Tyr	Leu
	290					295					300				
Glu	Thr	Pro	Gly	Asp	Glu	Asn	Glu	His	Ala	His	Phe	Gln	Lys	Ala	Lys
305					310					315					320
Glu	Arg	Leu	Glu	Ala	Lys	His	Arg	Glu	Arg	Met	Ser	Gln	Val	Met	Arg
				325					330					335	
Glu	Trp	Glu	Glu	Ala	Glu	Arg	Gln	Ala	Lys	Asn	Leu	Pro	Lys	Ala	Asp
			340					345					350		
Lys	Lys	Ala	Val	Ile	Gln	His	Phe	Gln	Glu	Lys	Val	Glu	Ser	Leu	Glu
		355					360					365			
Gln	Glu	Ala	Ala	Asn	Glu	Arg	Gln	Gln	Leu	Val	Glu	Thr	His	Met	Ala
	370					375					380				
Arg	Val	Glu	Ala	Met	Leu	Asn	Asp	Arg	Arg	Arg	Leu	Ala	Leu	Glu	Asn
385					390					395					400
Tyr	Ile	Thr	Ala	Leu	Gln	Ala	Val	Pro	Pro	Arg	Pro	Arg	His	Val	Phe
			405						410					415	
Asn	Met	Leu	Lys	Lys	Tyr	Val	Arg	Ala	Glu	Gln	Lys	Asp	Arg	Gln	His
			420					425					430		
Thr	Leu	Lys	His	Phe	Glu	His	Val	Arg	Met	Val	Asp	Pro	Lys	Lys	Ala
		435					440					445			
Ala	Gln	Ile	Arg	Ser	Gln	Val	Met	Thr	His	Leu	Arg	Val	Ile	Tyr	Glu
	450					455					460				
Arg	Met	Asn	Gln	Ser	Leu	Ser	Leu	Leu	Tyr	Asn	Val	Pro	Ala	Val	Ala
465					470					475					480
Glu	Glu	Ile	Gln	Asp	Glu	Val	Asp	Glu	Leu	Leu	Gln	Lys	Glu	Gln	Asn
				485					490					495	
Tyr	Ser	Asp	Asp	Val	Leu	Ala	Asn	Met	Ile	Ser	Glu	Pro	Arg	Ile	Ser
			500					505					510		
Tyr	Gly	Asn	Asp	Ala	Leu	Met	Pro	Ser	Leu	Thr	Glu	Thr	Lys	Thr	Thr
		515					520					525			
Val	Glu	Leu	Leu	Pro	Val	Asn	Gly	Glu	Phe	Ser	Leu	Asp	Asp	Leu	Gln
	530					535						540			

Pro Trp His Ser Phe Gly Ala Asp Ser Val Pro Ala Asn Thr Glu Asn  
545 550 555 560

Glu Val Glu Pro Val Asp Ala Arg Pro Ala Ala Asp Arg Gly Leu Thr  
565 570 575

Thr Arg Pro Gly Ser Gly Leu Thr Asn Ile Lys Thr Glu Glu Ile Ser  
580 585 590

Glu Val Lys Met Asp Ala Glu Phe Arg His Asp Ser Gly Tyr Glu Val  
595 600 605

His His Gln Lys Leu Val Phe Phe Ala Glu Asp Val Gly Ser Asn Lys  
610 615 620

Gly Ala Ile Ile Gly Leu Met Val Gly Gly Val Val Ile Ala Thr Val  
625 630 635 640

Ile Phe Ile Thr Leu Val Met Leu Lys Lys Lys Gln Tyr Thr Ser Ile  
645 650 655

His His Gly Val Val Glu Val Asp Ala Ala Val Thr Pro Glu Glu Arg  
660 665 670

His Leu Ser Lys Met Gln Gln Asn Gly Tyr Glu Asn Pro Thr Tyr Lys  
675 680 685

Phe Phe Glu Gln Met Gln Asn  
690 695

<210> 15  
<211> 2094  
<212> DNA  
<213> Homo sapiens

<400> 15  
atgctgcccg gtttggcact gctcctgctg gccgcctgga cggctcgggc gctggaggta 60  
cccactgatg gtaatgctgg cctgctggct gaaccccaga ttgccatggt ctgtggcaga 120  
ctgaacatgc acatgaatgt ccagaatggg aagtgggatt cagatccatc agggaccaa 180  
acctgcattg ataccaagga aggcatacctg cagtattgcc aagaagtcta ccctgaactg 240  
cagatcacca atgtggtaga agccaaccaa ccagtaccca tccagaactg gtgcaagcgg 300  
ggccgcaagc agtgcaagac ccatccccac tttgtgattc cctaccgctg cttagttggt 360  
gagtttgtaa gtgatgccct tctcgttcct gacaagtgca aattcttaca ccaggagagg 420  
atggatgttt gcgaaactca tcttcactgg cacaccgtcg ccaaagagac atgcagttag 480  
aagagtacca acttgcatga ctacggcatg ttgctgccct gcggaattga caagttccga 540  
ggggttagagt ttgtgtgttg cccactggct gaagaaagtg acaatgtgga ttctgctgat 600  
gcggaggagg atgactcgga tgtctggtgg ggccggagcag acacagacta tgcagatggg 660  
agtgaagaca aagtagtaga agtagcagag gaggaagaag tggctgaggt ggaagaagaa 720  
gaagccgatg atgacgagga cgatgaggat ggtgatgagg tagaggaaga ggctgaggaa 780  
ccctacgaag aagccacaga gagaaccacc agcattgcca ccaccaccac caccaccaca 840  
gagtctgtgg aagaggtggt tctagttcct acaacagcag ccagtacccc tgatgccgtt 900  
gacaagtatc tctgagacacc tggggatgag aatgaacatg cccatttcca gaaagccaaa 960  
gagaggcttg aggccaagca ccgagagaga atgtcccagg tcatgagaga atgggaagag 1020  
gcagaacgtc aagcaaagaa cttgcctaaa gctgataaga aggcagttat ccagcatttc 1080  
caggagaaag tggaaatctt ggaacaggaa gcagccaacg agagacagca gctggtggag 1140  
acacacatgg ccagagtgga agccatgctc aatgaccgcc gccgcctggc cctggagaa 1200  
tacatcaccc ctctgcaggc tgttcctcct cggcctcgtc acgtgttcaa tatgctaaag 1260  
aagtatgtcc gcgcagaaca gaaggacaga cagcaacccc taaagcattt cgagcatgtg 1320  
cgcatggtgg atcccaagaa agccgctcag atccggtccc aggttatgac acacctccgt 1380  
gtgatttatg agcgcagtaa tctgtctctc tccctgctct acaacgtgcc tgcagtggcc 1440  
gaggagattc aggatgaagt tgatgagctg cttcagaaag agcaaaacta ttcagatgac 1500





Thr Arg Pro Gly Ser Gly Leu Thr Asn Ile Lys Thr Glu Glu Ile Ser  
580 585 590

Glu Val Lys Met Asp Ala Glu Phe Arg His Asp Ser Gly Tyr Glu Val  
595 600 605

His His Gln Lys Leu Val Phe Phe Ala Glu Asp Val Gly Ser Asn Lys  
610 615 620

Gly Ala Ile Ile Gly Leu Met Val Gly Gly Val Val Ile Ala Thr Val  
625 630 635 640

Ile Val Ile Thr Leu Val Met Leu Lys Lys Lys Gln Tyr Thr Ser Ile  
645 650 655

His His Gly Val Val Glu Val Asp Ala Ala Val Thr Pro Glu Glu Arg  
660 665 670

His Leu Ser Lys Met Gln Gln Asn Gly Tyr Glu Asn Pro Thr Tyr Lys  
675 680 685

Phe Phe Glu Gln Met Gln Asn Lys Lys  
690 695

<210> 17  
<211> 2094  
<212> DNA  
<213> Homo sapiens

<400> 17  
atgctgcccg gtttggcact gctcctgctg gccgcctgga cggctcgggc gctggaggta 60  
cccactgatg gtaatgctgg cctgctggct gaaccccaga ttgccatgtt ctgtggcaga 120  
ctgaacatgc acatgaatgt ccagaatggg aagtgggatt cagatccatc agggaccaa 180  
acctgcattg ataccaagga aggcattcct cagtattgcc aagaagtcta ccctgaactg 240  
cagatcacca atgtggtaga agccaaccaa ccagtgaaca tccagaactg gtgcaagcgg 300  
ggccgcaagc agtgcaagac ccattccccac tttgtgatcc cctaccgctg cttagttggg 360  
gagtttgtaa gtgatgccct tctcgttcct gacaagtgca aattcttaca ccaggagagg 420  
atggatgttt gcgaaactca tcttcactgg cacaccgtcg ccaaagagac atgcagtga 480  
aagagtacca acttgcattg ctacggcatg ttgctgcctt gcggaattga caagttccga 540  
ggggtagagt ttgtgtgttg cccactggct gaagaaagtg acaatgtgga ttctgctgat 600  
gcgaggaggg atgactcggg tgtctgggtg ggccggagcag acacagacta tgcagatggg 660  
agtgaagaca aagtagtaga agtagcagag gaggaagaag tggctgaggt ggaagaagaa 720  
gaagccgatg atgacgagga cgatgaggat ggtgatgagg tagaggaaga ggctgaggaa 780  
ccctacgaag aagccacaga gagaaccacc agcattgcca ccaccaccac caccaccaca 840  
gagtctgtgg aagaggtggg tcgagttcct acaacagcag ccagtacccc tgatgccgtt 900  
gacaagtatc tcgagacacc tgggggatgag aatgaacatg cccatttcca gaaagccaaa 960  
gagaggcttg aggccaagca ccgagagaga atgtcccagg tcatgagaga atgggaagag 1020  
gcagaacgtc aagcaaagaa cttgcctaaa gctgataaga aggcagttat ccagcatttc 1080  
caggagaaag tggaaatctt ggaacaggaa gcagccaacg agagacagca gctgggtggg 1140  
acacacatgg ccagagtggg agccatgctc aatgaccgcc gccgcctggc cctggagaac 1200  
tacatcaccg ctctgcaggc tgttcctcct cggcctcgtc acgtgttcaa tatgctaaag 1260  
aagtatgtcc gcgcagaaca gaaggacaga cagcacacc taaagcattt cgagcatgtg 1320  
cgcatgggtg atcccaagaa agccgctcag atccgggtccc aggttatgac acacctccgt 1380  
gtgatttatg agcgcattgaa tcagtctctc tccctgctct acaacgtgcc tgcagtggcc 1440  
gaggagattc aggatgaagt tgatgagctg cttcagaaag agcaaaacta ttcagatgac 1500  
gtcttgacca acatgattag tgaaccaagg atcagttacg gaaacgatgc tctcatgcca 1560  
tctttgaccg aaacgaaaac caccgtggag ctcccttccc tgaatggaga gttcagcctg 1620  
gacgatctcc agccgtggca ttcttttggg gctgactctg tgccagccaa cacagaaaac 1680  
gaagttgagc ctgttgatgc ccgcctgct gccgaccgag gactgaccac tcgaccaggt 1740  
tctgggttga caaatatcaa gacggaggag atctctgaag tgaatctgga tgcagaattc 1800  
cgacatgact caggatatga agttcatcat caaaaattgg tgttctttgc agaagatgtg 1860



ggttcaaaca aaggtgcaat cattggactc atggtgggcg gtgttgtcat agcgacagtg 1920  
atcgatcatca ccttggtgat gctgaagaag aaacagtaca catccattca tcatgggtgtg 1980  
gtggaggttg acgccgtgt caccacagag gagcgccacc tgtccaagat gcagcagaac 2040  
ggctacgaaa atccaaccta caagttcttt gagcagatgc agaacaagaa gtag 2094

<210> 18  
<211> 697  
<212> PRT  
<213> Homo sapiens

<400> 18  
Met Leu Pro Gly Leu Ala Leu Leu Leu Leu Ala Ala Trp Thr Ala Arg  
1 5 10 15  
Ala Leu Glu Val Pro Thr Asp Gly Asn Ala Gly Leu Leu Ala Glu Pro  
20 25 30  
Gln Ile Ala Met Phe Cys Gly Arg Leu Asn Met His Met Asn Val Gln  
35 40 45  
Asn Gly Lys Trp Asp Ser Asp Pro Ser Gly Thr Lys Thr Cys Ile Asp  
50 55 60  
Thr Lys Glu Gly Ile Leu Gln Tyr Cys Gln Glu Val Tyr Pro Glu Leu  
65 70 75 80  
Gln Ile Thr Asn Val Val Glu Ala Asn Gln Pro Val Thr Ile Gln Asn  
85 90 95  
Trp Cys Lys Arg Gly Arg Lys Gln Cys Lys Thr His Pro His Phe Val  
100 105 110  
Ile Pro Tyr Arg Cys Leu Val Gly Glu Phe Val Ser Asp Ala Leu Leu  
115 120 125  
Val Pro Asp Lys Cys Lys Phe Leu His Gln Glu Arg Met Asp Val Cys  
130 135 140  
Glu Thr His Leu His Trp His Thr Val Ala Lys Glu Thr Cys Ser Glu  
145 150 155 160  
Lys Ser Thr Asn Leu His Asp Tyr Gly Met Leu Leu Pro Cys Gly Ile  
165 170 175  
Asp Lys Phe Arg Gly Val Glu Phe Val Cys Cys Pro Leu Ala Glu Glu  
180 185 190  
Ser Asp Asn Val Asp Ser Ala Asp Ala Glu Glu Asp Asp Ser Asp Val  
195 200 205  
Trp Trp Gly Gly Ala Asp Thr Asp Tyr Ala Asp Gly Ser Glu Asp Lys  
210 215 220  
Val Val Glu Val Ala Glu Glu Glu Glu Val Ala Glu Val Glu Glu Glu  
225 230 235 240  
Glu Ala Asp Asp Asp Glu Asp Asp Glu Asp Gly Asp Glu Val Glu Glu  
245 250 255  
Glu Ala Glu Glu Pro Tyr Glu Glu Ala Thr Glu Arg Thr Thr Ser Ile  
260 265 270

CGCGAGGTTG

Ala	Thr	Thr	Thr	Thr	Thr	Thr	Thr	Glu	Ser	Val	Glu	Glu	Val	Val	Arg
	275						280					285			
Val	Pro	Thr	Thr	Ala	Ala	Ser	Thr	Pro	Asp	Ala	Val	Asp	Lys	Tyr	Leu
	290					295					300				
Glu	Thr	Pro	Gly	Asp	Glu	Asn	Glu	His	Ala	His	Phe	Gln	Lys	Ala	Lys
305					310					315					320
Glu	Arg	Leu	Glu	Ala	Lys	His	Arg	Glu	Arg	Met	Ser	Gln	Val	Met	Arg
				325					330					335	
Glu	Trp	Glu	Glu	Ala	Glu	Arg	Gln	Ala	Lys	Asn	Leu	Pro	Lys	Ala	Asp
			340					345					350		
Lys	Lys	Ala	Val	Ile	Gln	His	Phe	Gln	Glu	Lys	Val	Glu	Ser	Leu	Glu
		355					360					365			
Gln	Glu	Ala	Ala	Asn	Glu	Arg	Gln	Gln	Leu	Val	Glu	Thr	His	Met	Ala
	370					375					380				
Arg	Val	Glu	Ala	Met	Leu	Asn	Asp	Arg	Arg	Arg	Leu	Ala	Leu	Glu	Asn
385					390					395					400
Tyr	Ile	Thr	Ala	Leu	Gln	Ala	Val	Pro	Pro	Arg	Pro	Arg	His	Val	Phe
			405					410						415	
Asn	Met	Leu	Lys	Lys	Tyr	Val	Arg	Ala	Glu	Gln	Lys	Asp	Arg	Gln	His
		420						425					430		
Thr	Leu	Lys	His	Phe	Glu	His	Val	Arg	Met	Val	Asp	Pro	Lys	Lys	Ala
		435					440					445			
Ala	Gln	Ile	Arg	Ser	Gln	Val	Met	Thr	His	Leu	Arg	Val	Ile	Tyr	Glu
	450					455					460				
Arg	Met	Asn	Gln	Ser	Leu	Ser	Leu	Leu	Tyr	Asn	Val	Pro	Ala	Val	Ala
465					470					475					480
Glu	Glu	Ile	Gln	Asp	Glu	Val	Asp	Glu	Leu	Leu	Gln	Lys	Glu	Gln	Asn
				485					490					495	
Tyr	Ser	Asp	Asp	Val	Leu	Ala	Asn	Met	Ile	Ser	Glu	Pro	Arg	Ile	Ser
		500						505					510		
Tyr	Gly	Asn	Asp	Ala	Leu	Met	Pro	Ser	Leu	Thr	Glu	Thr	Lys	Thr	Thr
		515					520					525			
Val	Glu	Leu	Leu	Pro	Val	Asn	Gly	Glu	Phe	Ser	Leu	Asp	Asp	Leu	Gln
	530					535					540				
Pro	Trp	His	Ser	Phe	Gly	Ala	Asp	Ser	Val	Pro	Ala	Asn	Thr	Glu	Asn
545					550					555					560
Glu	Val	Glu	Pro	Val	Asp	Ala	Arg	Pro	Ala	Ala	Asp	Arg	Gly	Leu	Thr
				565					570					575	
Thr	Arg	Pro	Gly	Ser	Gly	Leu	Thr	Asn	Ile	Lys	Thr	Glu	Glu	Ile	Ser
			580					585					590		
Glu	Val	Asn	Leu	Asp	Ala	Glu	Phe	Arg	His	Asp	Ser	Gly	Tyr	Glu	Val
		595					600					605			

His His Gln Lys Leu Val Phe Phe Ala Glu Asp Val Gly Ser Asn Lys  
610 615 620

Gly Ala Ile Ile Gly Leu Met Val Gly Gly Val Val Ile Ala Thr Val  
625 630 635 640

Ile Val Ile Thr Leu Val Met Leu Lys Lys Lys Gln Tyr Thr Ser Ile  
645 650 655

His His Gly Val Val Glu Val Asp Ala Ala Val Thr Pro Glu Glu Arg  
660 665 670

His Leu Ser Lys Met Gln Gln Asn Gly Tyr Glu Asn Pro Thr Tyr Lys  
675 680 685

Phe Phe Glu Gln Met Gln Asn Lys Lys  
690 695

<210> 19  
<211> 2094  
<212> DNA  
<213> Homo sapiens

<400> 19

atgctgcccg	gtttggcact	gctcctgctg	gccgcctgga	cggctcgggc	gctggaggta	60
cccactgatg	gtaatgctgg	cctgctggct	gaaccccaga	ttgccatgtt	ctgtggcaga	120
ctgaacatgc	acatgaatgt	ccagaatggg	aagtgggatt	cagatccatc	agggaccaa	180
acctgcattg	ataccaagga	aggcatcctg	cagtattgcc	aagaagtcta	ccctgaactg	240
cagatcacca	atgtggtaga	agccaaccaa	ccagtgaacca	tccagaactg	gtgcaagcgg	300
ggccgcaagc	agtgaagac	ccatccccac	tttgtgatcc	cctaccgctg	cttagttggg	360
gagtttgtaa	gtgatgccct	tctcgttcct	gacaagtgca	aattcttaca	ccaggagagg	420
atggatgttt	gcgaaactca	tcttcactgg	cacaccgtcg	ccaaagagac	atgcagttag	480
aagagtacca	acttgcatga	ctacggcatg	ttgctgccct	gcggaattga	caagttccga	540
ggggtagagt	ttgtgtgttg	cccactggct	gaagaaagtg	acaatgtgga	ttctgctgat	600
gcggaggagg	atgactcgga	tgtctgggtg	ggcggagcag	acacagacta	tgcagatggg	660
agtgaagaca	aagtagtaga	agtagcagag	gaggaagaag	tggctgaggt	ggaagaagaa	720
gaagccgatg	atgacgagga	cgatgaggat	ggtgatgagg	tagaggaaga	ggctgaggaa	780
ccctacgaag	aagccacaga	gagaaccacc	agcattgcca	ccaccaccac	caccaccaca	840
gagtctgtgg	aagaggtggg	tcgagttcct	acaacagcag	ccagtacccc	tgatgccgtt	900
gacaagtatc	tcgagacacc	tggggatgag	aatgaacatg	cccatttcca	gaaagccaaa	960
gagaggcttg	aggccaagca	ccgagagaga	atgtcccagg	tcattgagaga	atgggaagag	1020
gcagaacgtc	aagcaaagaa	cttgccataa	gctgataaga	aggcagttat	ccagcatttc	1080
caggagaaag	tggaatcttt	ggaacaggaa	gcagccaacg	agagacagca	gctgggtggg	1140
acacacatgg	ccagagtggg	agccatgctc	aatgaccgcc	gccgcctggc	cctggagaac	1200
tacatcaccg	ctctgcaggg	tgttcctcct	cggcctcgct	acgtgttcaa	tatgctaaag	1260
aagtatgtcc	gcgcagaaca	gaaggacaga	cagcacaccc	taaagcattt	cgagcatgtg	1320
cgcattggtg	atcccaagaa	agccgctcag	atccggtccc	agggttatgac	acacctccgt	1380
gtgatttatg	agcgcattga	tcagtctctc	tccttgctct	acaacgtgcc	tgcagtggcc	1440
gaggagattc	aggatgaagt	tgatgagctg	cttcagaaag	agcaaaacta	ttcagatgac	1500
gtcttgggcca	acatgattag	tgaaccaagg	atcagttacg	gaaacgatgc	tctcatgcca	1560
tctttgaccg	aaacgaaaac	caccgtggag	ctccttcccg	tgaatggaga	gttcagcctg	1620
gacgatctcc	agccgtggca	ttcttttggg	gctgactctg	tgccagccaa	cacagaaaac	1680
gaagttgagc	ctgttgatgc	ccgccttgct	gccgaccgag	gactgaccac	tcgaccaggt	1740
tctgggttga	caaatatcaa	gacggaggag	atctctgaag	tgaagatgga	tgcagaattc	1800
cgacatgact	caggatatga	agttcatcat	caaaaattgg	tgttctttgc	agaagatgtg	1860
ggttcaaaca	aaggtgcaat	cattggactc	atgggtggcg	gtgttgatcat	agcgacagtg	1920
atcttcatca	ccttggtgat	gctgaagaag	aaacagtaca	catccattca	tcatggtgtg	1980
gtggagggtg	acgccgctgt	caccccagag	gagcgccacc	tgtccaagat	gcagcagaac	2040
ggctacgaaa	atccaaccta	caagttcttt	gagcagatgc	agaacaagaa	gt.ag	2094

<210> 20  
<211> 697

<213> Homo sapiens

Met Leu Pro Gly Leu Ala Leu Leu Leu Leu Ala Ala Trp Thr Ala Arg  
1 5 10 15

Gln Ile Ala Met Phe Cys Gly Arg Leu Asn Met His Met Asn Val Gln  
35 40 45

Thr Lys Glu Gly Ile Leu Gln Tyr Cys Gln Glu Val Tyr Pro Glu Leu  
65 70 75 80

Trp Cys Lys Arg Gly Arg Lys Gln Cys Lys Thr His Pro His Phe Val  
100 105 110

Val Pro Asp Lys Cys Lys Phe Leu His Gln Glu Arg Met Asp Val Cys  
130 135 140

Lys Ser Thr Asn Leu His Asp Tyr Gly Met Leu Ieu Pro Cys Gly Ile  
165 170 175

Ser Asp Asn Val Asp Ser Ala Asp Ala Glu Glu Asp Asp Ser Asp Val  
195 200 205

Val Val Glu Val Ala Glu Glu Glu Glu Val Ala Glu Val Glu Glu Glu  
225 230 235 240

Glu Ala Glu Glu Pro Tyr Glu Glu Ala Thr Glu Arg Thr Thr Ser Ile  
260 265 270

Val Pro Thr Thr Ala Ala Ser Thr Pro Asp Ala Val Asp Lys Tyr Leu  
290 295 300

Glu	Thr	Pro	Gly	Asp	Glu	Asn	Glu	His	Ala	His	Phe	Gln	Lys	Ala	Lys
305					310					315					320
Glu	Arg	Leu	Glu	Ala	Lys	His	Arg	Glu	Arg	Met	Ser	Gln	Val	Met	Arg
				325					330					335	
Glu	Trp	Glu	Glu	Ala	Glu	Arg	Gln	Ala	Lys	Asn	Leu	Pro	Lys	Ala	Asp
			340					345					350		
Lys	Lys	Ala	Val	Ile	Gln	His	Phe	Gln	Glu	Lys	Val	Glu	Ser	Leu	Glu
		355					360					365			
Gln	Glu	Ala	Ala	Asn	Glu	Arg	Gln	Gln	Leu	Val	Glu	Thr	His	Met	Ala
	370					375					380				
Arg	Val	Glu	Ala	Met	Leu	Asn	Asp	Arg	Arg	Arg	Leu	Ala	Leu	Glu	Asn
385					390					395					400
Tyr	Ile	Thr	Ala	Leu	Gln	Ala	Val	Pro	Pro	Arg	Pro	Arg	His	Val	Phe
				405					410					415	
Asn	Met	Leu	Lys	Lys	Tyr	Val	Arg	Ala	Glu	Gln	Lys	Asp	Arg	Gln	His
			420					425					430		
Thr	Leu	Lys	His	Phe	Glu	His	Val	Arg	Met	Val	Asp	Pro	Lys	Lys	Ala
		435					440					445			
Ala	Gln	Ile	Arg	Ser	Gln	Val	Met	Thr	His	Leu	Arg	Val	Ile	Tyr	Glu
	450					455					460				
Arg	Met	Asn	Gln	Ser	Leu	Ser	Leu	Leu	Tyr	Asn	Val	Pro	Ala	Val	Ala
465					470					475					480
Glu	Glu	Ile	Gln	Asp	Glu	Val	Asp	Glu	Leu	Leu	Gln	Lys	Glu	Gln	Asn
			485					490						495	
Tyr	Ser	Asp	Asp	Val	Leu	Ala	Asn	Met	Ile	Ser	Glu	Pro	Arg	Ile	Ser
			500					505					510		
Tyr	Gly	Asn	Asp	Ala	Leu	Met	Pro	Ser	Leu	Thr	Glu	Thr	Lys	Thr	Thr
		515					520					525			
Val	Glu	Leu	Leu	Pro	Val	Asn	Gly	Glu	Phe	Ser	Leu	Asp	Asp	Leu	Gln
	530					535					540				
Pro	Trp	His	Ser	Phe	Gly	Ala	Asp	Ser	Val	Pro	Ala	Asn	Thr	Glu	Asn
545					550					555					560
Glu	Val	Glu	Pro	Val	Asp	Ala	Arg	Pro	Ala	Ala	Asp	Arg	Gly	Leu	Thr
				565					570					575	
Thr	Arg	Pro	Gly	Ser	Gly	Leu	Thr	Asn	Ile	Lys	Thr	Glu	Glu	Ile	Ser
			580					585					590		
Glu	Val	Lys	Met	Asp	Ala	Glu	Phe	Arg	His	Asp	Ser	Gly	Tyr	Glu	Val
		595					600					605			
His	His	Gln	Lys	Leu	Val	Phe	Phe	Ala	Glu	Asp	Val	Gly	Ser	Asn	Lys
	610					615					620				
Gly	Ala	Ile	Ile	Gly	Leu	Met	Val	Gly	Gly	Val	Val	Ile	Ala	Thr	Val
625					630					635					640

Ile Phe Ile Thr Leu Val Met Leu Lys Lys Lys Gln Tyr Thr Ser Ile  
645 650 655

His His Gly Val Val Glu Val Asp Ala Ala Val Thr Pro Glu Glu Arg  
660 665 670

His Leu Ser Lys Met Gln Gln Asn Gly Tyr Glu Asn Pro Thr Tyr Lys  
675 680 685

Phe Phe Glu Gln Met Gln Asn Lys Lys  
690 695

<210> 21  
<211> 1341  
<212> DNA  
<213> Homo sapiens

<400> 21  
atggctagca tgactggtgg acagcaaattg ggtcgcggtat ccacccagca cggcatccgg 60  
ctgcccctgc gcagcggcct gggggggcgcc cccctggggc tgcggctgcc ccgggagacc 120  
gacgaagagc ccgaggagcc cggccggagg ggcagctttg tggagatggt ggacaacctg 180  
aggggcaagt cggggcaggg ctactacgtg gagatgaccg tgggcagccc cccgcagacg 240  
ctcaacatcc tgggtggatcc aggcagcagt aactttgcag tgggtgctgc ccccccaccc 300  
ttcctgcacg gctactacca gaggcagctg tccagcacat accgggacct ccggaagggt 360  
gtgtatgtgc cctacaccca gggcaagtgg gaaggggagc tgggcaccga cctggtaagc 420  
atcccccatg gcccacacgt cactgtgcgt gccaacattg ctgccatcac tgaatcagac 480  
aagttcttca tcaacggctc caactgggaa ggcatacctg ggctggccta tgctgagatt 540  
gccaggcctg acgactccct ggagcctttc tttgactctc tggtaaagca gaccacggtt 600  
cccaacctct tctccctgca cctttgtggt gctggcttcc cctcaacca gtctgaagtg 660  
ctggcctctg tcggaggagg catgatcatt ggaggtatcg accactcgct gtacacaggc 720  
agtctctggt atacacccat ccggcgggag tggattatg aggtcatcat tgtgcgggtg 780  
gagatcaatg gacaggatct gaaaatggac tgcaaggagt acaactatga caagagcatt 840  
gtggacagtg gcaccaccaa ccttcgtttg cccaagaaag tgtttgaagc tgcagtcaaa 900  
tccatcaagg cagcctcctc cacggagaag ttccctgatg gtttctggct aggagagcag 960  
ctgggtgtgt ggcaagcagg caccacccct tggaaacatt tcccagtcac ctactctac 1020  
ctaattgggtg aggttaccaa ccagtccttc cgcatacaca tccctccgca gcaataacctg 1080  
cggccagtgg aagatgtggc cacgtcccaa gacgactgtt acaagtttgc catctcacag 1140  
tcatccacgg gcactgttat gggagctgtt atcatggagg gcttctacgt tgtctttgat 1200  
cgggcccga aacgaattgg ctttgctgtc agcgcttgcc atgtgcacga tgagttcagg 1260  
acggcagcgg tgggaaggccc ttttgtcacc ttggacatgg aagactgtgg ctacaacatt 1320  
ccacagacag atgagtcattg a 1341

<210> 22  
<211> 446  
<212> PRT  
<213> Homo sapiens

<400> 22  
Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg Gly Ser Thr Gln  
1 5 10 15  
His Gly Ile Arg Leu Pro Leu Arg Ser Gly Leu Gly Gly Ala Pro Leu  
20 25 30  
Gly Leu Arg Leu Pro Arg Glu Thr Asp Glu Glu Pro Glu Glu Pro Gly  
35 40 45  
Arg Arg Gly Ser Phe Val Glu Met Val Asp Asn Leu Arg Gly Lys Ser  
50 55 60





Arg Ala Arg Lys Arg Ile Gly Phe Ala Val Ser Ala Cys His Val His  
405 410 415

Asp Glu Phe Arg Thr Ala Ala Val Glu Gly Pro Phe Val Thr Leu Asp  
420 425 430

Met Glu Asp Cys Gly Tyr Asn Ile Pro Gln Thr Asp Glu Ser  
435 440 445

<210> 23  
<211> 1380  
<212> DNA  
<213> Homo sapiens

<400> 23  
atggctagca tgactgggtgg acagcaaattg ggtcgcggat cgatgactat ctctgactct 60  
ccgcgtgaac aggacggatc caccacagcac ggcattccggc tgcccctgcg cagcggcctg 120  
gggggcgccc ccctggggct gcggctgccc cgggagaccg acgaagagcc cgaggagccc 180  
ggcgggaggg gcagctttgt ggagatgggtg gacaacctga ggggcaagtc ggggcagggc 240  
tactacgtgg agatgaccgt gggcagcccc ccgcagacgc tcaacatcct ggtggataca 300  
ggcagcagta actttgcagt ggggtgctgcc cccacccctt tcctgcatcg ctactaccag 360  
aggcagctgt ccagcacata ccgggacctc cggaagggtg tgtatgtgcc ctacaccag 420  
ggcaagtggg aaggggagct gggcaccgac ctggtaagca tcccccatgg cccaacgctc 480  
actgtgcgtg ccaacattgc tgccatcact gaatcagaca agttcttcat caacggctcc 540  
aactgggaag gcatcctggg gctggcctat gctgagattg ccaggcctga cgactccctg 600  
gagcctttct ttgactctct ggtaaagcag acccagcttc ccaacctctt ctccctgcac 660  
ctttgtgggtg ctggcttccc cctcaaccag tctgaagtgc tggcctctgt cggagggagc 720  
atgatcattg gaggtatcga ccactcgtg tacacaggca gtctctggta tacacccatc 780  
cggcgggaggt ggtattatga ggtcatcatt gtgcgggtgg agatcaatgg acaggatctg 840  
aaaatggact gcaaggagta caactatgac aagagcattg tggacagtgg caccaccaac 900  
cttcgtttgc ccaagaaagt gtttgaagct gcagtcaaat ccatcaaggc agcctcctcc 960  
acggagaagt tccctgatgg tttctggcta ggagagcagc tgggtgtgctg gcaagcaggc 1020  
accacccctt ggaacatttt cccagtcac tcactctacc taatgggtga ggttaccac 1080  
cagtccttcc gcatcacat ccttcgcag caatacctgc ggccagtga agatgtggcc 1140  
acgtcccaag acgactgtta caagtttgcc atctcacagt catccacggg cactgttatg 1200  
ggagctgtta tcatggaggg cttctacgtt gtctttgatc gggcccgaac acgaattggc 1260  
tttgctgtca gcgcttgcca tgtgcacgat gagttcagga cggcagcggg ggaaggccct 1320  
tttgctcacct tggacatgga agactgtggc tacaacattc cacagacaga tgagtcatga 1380

<210> 24  
<211> 459  
<212> PRT  
<213> Homo sapiens

<400> 24  
Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg Gly Ser Met Thr  
1 5 10 15  
Ile Ser Asp Ser Pro Arg Glu Gln Asp Gly Ser Thr Gln His Gly Ile  
20 25 30  
Arg Leu Pro Leu Arg Ser Gly Leu Gly Gly Ala Pro Leu Gly Leu Arg  
35 40 45  
Leu Pro Arg Glu Thr Asp Glu Glu Pro Glu Glu Pro Gly Arg Arg Gly  
50 55 60  
Ser Phe Val Glu Met Val Asp Asn Leu Arg Gly Lys Ser Gly Gln Gly  
65 70 75 80  
Tyr Tyr Val Glu Met Thr Val Gly Ser Pro Pro Gln Thr Leu Asn Ile  
85 90 95

Leu Val Asp Thr Gly Ser Ser Asn Phe Ala Val Gly Ala Ala Pro His  
 100 105 110  
 Pro Phe Leu His Arg Tyr Tyr Gln Arg Gln Leu Ser Ser Thr Tyr Arg  
 115 120 125  
 Asp Leu Arg Lys Gly Val Tyr Val Pro Tyr Thr Gln Gly Lys Trp Glu  
 130 135 140  
 Gly Glu Leu Gly Thr Asp Leu Val Ser Ile Pro His Gly Pro Asn Val  
 145 150 155 160  
 Thr Val Arg Ala Asn Ile Ala Ala Ile Thr Glu Ser Asp Lys Phe Phe  
 165 170 175  
 Ile Asn Gly Ser Asn Trp Glu Gly Ile Leu Gly Leu Ala Tyr Ala Glu  
 180 185 190  
 Ile Ala Arg Pro Asp Asp Ser Leu Glu Pro Phe Phe Asp Ser Leu Val  
 195 200 205  
 Lys Gln Thr His Val Pro Asn Leu Phe Ser Leu His Leu Cys Gly Ala  
 210 215 220  
 Gly Phe Pro Leu Asn Gln Ser Glu Val Leu Ala Ser Val Gly Gly Ser  
 225 230 235 240  
 Met Ile Ile Gly Gly Ile Asp His Ser Leu Tyr Thr Gly Ser Leu Trp  
 245 250 255  
 Tyr Thr Pro Ile Arg Arg Glu Trp Tyr Tyr Glu Val Ile Ile Val Arg  
 260 265 270  
 Val Glu Ile Asn Gly Gln Asp Leu Lys Met Asp Cys Lys Glu Tyr Asn  
 275 280 285  
 Tyr Asp Lys Ser Ile Val Asp Ser Gly Thr Thr Asn Leu Arg Leu Pro  
 290 295 300  
 Lys Lys Val Phe Glu Ala Ala Val Lys Ser Ile Lys Ala Ala Ser Ser  
 305 310 315 320  
 Thr Glu Lys Phe Pro Asp Gly Phe Trp Leu Gly Glu Gln Leu Val Cys  
 325 330 335  
 Trp Gln Ala Gly Thr Thr Pro Trp Asn Ile Phe Pro Val Ile Ser Leu  
 340 345 350  
 Tyr Leu Met Gly Glu Val Thr Asn Gln Ser Phe Arg Ile Thr Ile Leu  
 355 360 365  
 Pro Gln Gln Tyr Leu Arg Pro Val Glu Asp Val Ala Thr Ser Gln Asp  
 370 375 380  
 Asp Cys Tyr Lys Phe Ala Ile Ser Gln Ser Ser Thr Gly Thr Val Met  
 385 390 395 400  
 Gly Ala Val Ile Met Glu Gly Phe Tyr Val Val Phe Asp Arg Ala Arg  
 405 410 415  
 Lys Arg Ile Gly Phe Ala Val Ser Ala Cys His Val His Asp Glu Phe  
 420 425 430

100  
105  
110  
115  
120  
125  
130  
135  
140  
145  
150  
155  
160  
165  
170  
175  
180  
185  
190  
195  
200  
205  
210  
215  
220  
225  
230  
235  
240  
245  
250  
255  
260  
265  
270  
275  
280  
285  
290  
295  
300  
305  
310  
315  
320  
325  
330  
335  
340  
345  
350  
355  
360  
365  
370  
375  
380  
385  
390  
395  
400  
405  
410  
415  
420  
425  
430

Arg Thr Ala Ala Val Glu Gly Pro Phe Val Thr Leu Asp Met Glu Asp  
435 440 445

Cys Gly Tyr Asn Ile Pro Gln Thr Asp Glu Ser  
450 455

<210> 25  
<211> 1302  
<212> DNA  
<213> Homo sapiens

<400> 25  
atgactcagc atggtattcg tctgccactg cgtagcggtc tgggtgggtgc tccactgggt 60  
ctgcgtctgc cccgggagac cgacgaagag cccgaggagc cgggccggag gggcagcttt 120  
gtggagatgg tggacaacct gaggggcaag tccggggcagg gctactacgt ggagatgacc 180  
gtgggcagcc ccccgagac gctcaacatc ctgggtggata caggcagcag taactttgca 240  
gtgggtgctg cccccaccc cttcctgcat cgctactacc agaggcagct gtccagcaca 300  
taccgggacc tccggaagg tgtgtatgtg ccctacaccc agggcaagtg ggaaggggag 360  
ctgggcaccg acctggttaag catcccccat ggcccccaacg tcaactgtgcg tgccaacatt 420  
gctgccatca ctgaatcaga caagttcttc atcaacggct ccaactggga aggcattcctg 480  
gggctggcct atgctgagat tgccaggcct gacgactccc tggagccttt ctttgactct 540  
ctggtaaagc agaccacgt tcccaacctc ttctccctgc acctttgtgg tgcctggcttc 600  
cccctcaacc agtctgaagt gctggcctct gtcggaggga gcatgatcat tggaggtatc 660  
gaccactcgc tgtacacagg cagtctctgg tatacaccca tccggcgaggga gtggtattat 720  
gaggtcatca ttgtgcgggt ggagatcaat ggacaggatc tgaaaatgga ctgcaaggag 780  
tacaactatg acaagagcat tgtggacagt ggcaccacca accttcgttt gcccaagaaa 840  
gtgtttgaag ctgcagtcaa atccatcaag gcagcctcct ccacggagaa gttccctgat 900  
ggtttctggc taggagagca gctgggtgtgc tggcaagcag gcaccacccc ttggaacatt 960  
ttcccagtc tctcactcta cctaattgggt gaggttacca accagtcctt ccgcatcacc 1020  
atccttcgc agcaatacct gcggccagtg gaagatgtgg ccacgtccca agacgactgt 1080  
tacaagttag ccattctaca gtcattccacg ggcactgtta tgggagctgt tatcatggag 1140  
ggcttctacg ttgtctttga tccgggccga aaacgaattg gctttgtctgt cagcgcttgc 1200  
catgtgcacg atgagttcag gacggcagcg gtggaaggcc cttttgtcac cttggacatg 1260  
gaagactgtg gctacaacat tccacagaca gatgagtcac ga 1302

<210> 26  
<211> 433  
<212> PRT  
<213> Homo sapiens

<400> 26  
Met Thr Gln His Gly Ile Arg Leu Pro Leu Arg Ser Gly Leu Gly Gly  
1 5 10 15  
Ala Pro Leu Gly Leu Arg Leu Pro Arg Glu Thr Asp Glu Glu Pro Glu  
20 25 30  
Glu Pro Gly Arg Arg Gly Ser Phe Val Glu Met Val Asp Asn Leu Arg  
35 40 45  
Gly Lys Ser Gly Gln Gly Tyr Tyr Val Glu Met Thr Val Gly Ser Pro  
50 55 60  
Pro Gln Thr Leu Asn Ile Leu Val Asp Thr Gly Ser Ser Asn Phe Ala  
65 70 75 80  
Val Gly Ala Ala Pro His Pro Phe Leu His Arg Tyr Tyr Gln Arg Gln  
85 90 95  
Leu Ser Ser Thr Tyr Arg Asp Leu Arg Lys Gly Val Tyr Val Pro Tyr  
100 105 110



<210> 27  
<211> 1278  
<212> DNA  
<213> Homo sapiens

<400> 27  
atggctagca tgactggtgg acagcaaattg ggtcgcggat cgatgactat ctctgactct 60  
ccgctggact ctggtatcga aaccgacgga tcctttgtgg agatgggtgga caacctgagg 120  
ggcaagtcgg ggcagggcta ctacgtggag atgaccgtgg gcagcccccc gcagacgctc 180  
aacatcctgg tggatacagg cagcagtaac tttgcagtgg gtgctgcccc ccacccttc 240  
ctgcatcgct actaccagag gcagctgtcc agcacatacc gggacctccg gaagggtgtg 300  
tatgtgccct acaccaggg caagtgggaa ggggagctgg gcaccgacct ggtaagcatc 360  
ccccatggcc ccaacgtcac tgtgcgtgcc aacattgctg ccatcactga atcagacaag 420  
ttcttcatca acggctccaa ctgggaaggc atcctggggc tggcctatgc tgagattgcc 480  
aggcctgacg actccctgga gcctttcttt gactctctgg taaagcagac ccacgttccc 540  
aacctcttct cctgacact ttgtggtgct ggcttcccc tcaaccagtc tgaagtgtg 600  
gcctctgtcg gagggagcat gatcattgga ggtatcgacc actcgctgta cacaggcagt 660  
ctctggtata caccatccg gcgggagtggt tattatgagg tcatcattgt gcgggtggag 720  
atcaatggac aggatctgaa aatggactgc aaggagtaca actatgacaa gagcattgtg 780  
gacagtggca ccaccaacct tcgtttgccc aagaaagtgt ttgaagctgc agtcaaattc 840  
atcaaggcag cctcctccac ggagaagttc cctgatgggt tctggctagg agagcagctg 900  
gtgtgctggc aagcaggcac cacccttgg aacattttcc cagtcatctc actctaccta 960  
atgggtgagg ttaccaacca gtccttccgc atcaccatcc ttccgcagca atacctgcgg 1020  
ccagtggagg atgtggccac gtcccaagac gactgttaca agtttgccat ctcacagtca 1080  
tccacgggca ctgttatggg agctgttatc atggagggtc tctacgttgt ctttgatcgg 1140  
gcccgaatac gaattggctt tgctgtcagc gcttgccatg tgcaagatga gttcaggacg 1200  
gcagcgggtg aaggcccttt tgtcaccttg gacatggaag actgtggcta caacattcca 1260  
cagacagatg agtcatga 1278

<210> 28  
<211> 425  
<212> PRT  
<213> Homo sapiens

<400> 28  
Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg Gly Ser Met Thr  
1 5 10 15  
Ile Ser Asp Ser Pro Leu Asp Ser Gly Ile Glu Thr Asp Gly Ser Phe  
20 25 30  
Val Glu Met Val Asp Asn Leu Arg Gly Lys Ser Gly Gln Gly Tyr Tyr  
35 40 45  
Val Glu Met Thr Val Gly Ser Pro Pro Gln Thr Leu Asn Ile Leu Val  
50 55 60  
Asp Thr Gly Ser Ser Asn Phe Ala Val Gly Ala Ala Pro His Pro Phe  
65 70 75 80  
Leu His Arg Tyr Tyr Gln Arg Gln Leu Ser Ser Thr Tyr Arg Asp Leu  
85 90 95  
Arg Lys Gly Val Tyr Val Pro Tyr Thr Gln Gly Lys Trp Glu Gly Glu  
100 105 110  
Leu Gly Thr Asp Leu Val Ser Ile Pro His Gly Pro Asn Val Thr Val  
115 120 125  
Arg Ala Asn Ile Ala Ala Ile Thr Glu Ser Asp Lys Phe Phe Ile Asn  
130 135 140

Gly	Ser	Asn	Trp	Glu	Gly	Ile	Leu	Gly	Leu	Ala	Tyr	Ala	Glu	Ile	Ala	145	150	155	160
Arg	Pro	Asp	Asp	Ser	Leu	Glu	Pro	Phe	Phe	Asp	Ser	Leu	Val	Lys	Gln	165	170	175	
Thr	His	Val	Pro	Asn	Leu	Phe	Ser	Leu	His	Leu	Cys	Gly	Ala	Gly	Phe	180	185	190	
Pro	Leu	Asn	Gln	Ser	Glu	Val	Leu	Ala	Ser	Val	Gly	Gly	Ser	Met	Ile	195	200	205	
Ile	Gly	Gly	Ile	Asp	His	Ser	Leu	Tyr	Thr	Gly	Ser	Leu	Trp	Tyr	Thr	210	215	220	
Pro	Ile	Arg	Arg	Glu	Trp	Tyr	Tyr	Glu	Val	Ile	Ile	Val	Arg	Val	Glu	225	230	235	240
Ile	Asn	Gly	Gln	Asp	Leu	Lys	Met	Asp	Cys	Lys	Glu	Tyr	Asn	Tyr	Asp	245	250	255	
Lys	Ser	Ile	Val	Asp	Ser	Gly	Thr	Thr	Asn	Leu	Arg	Leu	Pro	Lys	Lys	260	265	270	
Val	Phe	Glu	Ala	Ala	Val	Lys	Ser	Ile	Lys	Ala	Ala	Ser	Ser	Thr	Glu	275	280	285	
Lys	Phe	Pro	Asp	Gly	Phe	Trp	Leu	Gly	Glu	Gln	Leu	Val	Cys	Trp	Gln	290	295	300	
Ala	Gly	Thr	Thr	Pro	Trp	Asn	Ile	Phe	Pro	Val	Ile	Ser	Leu	Tyr	Leu	305	310	315	320
Met	Gly	Glu	Val	Thr	Asn	Gln	Ser	Phe	Arg	Ile	Thr	Ile	Leu	Pro	Gln	325	330	335	
Gln	Tyr	Leu	Arg	Pro	Val	Glu	Asp	Val	Ala	Thr	Ser	Gln	Asp	Asp	Cys	340	345	350	
Tyr	Lys	Phe	Ala	Ile	Ser	Gln	Ser	Ser	Thr	Gly	Thr	Val	Met	Gly	Ala	355	360	365	
Val	Ile	Met	Glu	Gly	Phe	Tyr	Val	Val	Phe	Asp	Arg	Ala	Arg	Lys	Arg	370	375	380	
Ile	Gly	Phe	Ala	Val	Ser	Ala	Cys	His	Val	His	Asp	Glu	Phe	Arg	Thr	385	390	395	400
Ala	Ala	Val	Glu	Gly	Pro	Phe	Val	Thr	Leu	Asp	Met	Glu	Asp	Cys	Gly	405	410	415	
Tyr	Asn	Ile	Pro	Gln	Thr	Asp	Glu	Ser								420	425		

<210> 29  
 <211> 1362  
 <212> DNA  
 <213> Homo sapiens

<400> 29  
 atggcccaag ccctgccttg gctcctgctg tggatgggag cgggagtgct gcctgcccac 60  
 ggcacccagc acggcatccg gctgcccctg cgcagcggcc tgggggggag cccctggggg 120

```

ctgcggctgc cccgggagac cgacgaagag cccgaggagc ccggccggag gggcagcttt 180
gtggagatgg tggacaacct gaggggcaag tccgggagcagg gctactacgt ggagatgacc 240
gtgggagagcc ccccgagagac gctcaacatc ctgggtggata caggcagcag taactttgca 300
gtgggtgctg cccccacccc ctctctgcat cgctactacc agaggcagct gtccagcaca 360
taccgggacc tccggaaggg tgtgtatgtg ccctacacccc agggcaagtg ggaaggggag 420
ctgggcacccg acctggtaag catcccccat ggcccccaacg tcactgtgcg tgccaacatt 480
gctgccatca ctgaatcaga caagttcttc atcaacggct ccaactggga aggcattcctg 540
gggctggcct atgctgagat tgccaggcct gacgactccc tggagccttt ctttgactct 600
ctggtaaagc agaccacagt tcccaacctc ttctccctgc acctttgtgg tgctggcttc 660
cccctcaacc agtctgaagt gctggcctct gtcggaggga gcatgatcat tggaggtatc 720
gaccactcgc tgtacacagg cagtctctgg tatacaccca tccggcggga gtggtattat 780
gaggtcatca ttgtgcgggt ggagatcaat ggacaggatc tgaaaatgga ctgcaaggag 840
tacaactatg acaagagcat tgtggacagt ggcaccacca accttcgttt gcccaagaaa 900
gtgtttgaag ctgcagtcaa atccatcaag gcagcctcct ccacggagaa gttccctgat 960
ggttttctggc taggagagca gctgggtgtgc tggcaagcag gcaccacccc ttggaacatt 1020
ttcccagtc tctcactcta cctaattgggt gaggttacca accagtcctt ccgcatcacc 1080
atccttccgc agcaatacct gcgccagtg gaagatgtgg ccacgtccca agacgactgt 1140
tacaagtttg ccatctcaca gtcattccacg ggcactgtta tgggagctgt tatcatggag 1200
ggcttctacg ttgtctttga tccgggcccga aaacgaattg gctttgctgt cagcgcttgc 1260
catgtgcacg atgagttcag gacggcagcg gtggaaggcc cttttgtcac cttggacatg 1320
gaagactgtg gctacaacat tccacagaca gatgagtcac ga 1362

```

<210> 30  
 <211> 453  
 <212> PRT  
 <213> Homo sapiens

<400> 30

Met	Ala	Gln	Ala	Leu	Pro	Trp	Leu	Leu	Leu	Trp	Met	Gly	Ala	Gly	Val
1				5					10					15	
Leu	Pro	Ala	His	Gly	Thr	Gln	His	Gly	Ile	Arg	Leu	Pro	Leu	Arg	Ser
			20					25					30		
Gly	Leu	Gly	Gly	Ala	Pro	Leu	Gly	Leu	Arg	Leu	Pro	Arg	Glu	Thr	Asp
	35						40					45			
Glu	Glu	Pro	Glu	Glu	Pro	Gly	Arg	Arg	Gly	Ser	Phe	Val	Glu	Met	Val
	50					55					60				
Asp	Asn	Leu	Arg	Gly	Lys	Ser	Gly	Gln	Gly	Tyr	Tyr	Val	Glu	Met	Thr
65					70					75					80
Val	Gly	Ser	Pro	Pro	Gln	Thr	Leu	Asn	Ile	Leu	Val	Asp	Thr	Gly	Ser
					85				90					95	
Ser	Asn	Phe	Ala	Val	Gly	Ala	Ala	Pro	His	Pro	Phe	Leu	His	Arg	Tyr
			100					105					110		
Tyr	Gln	Arg	Gln	Leu	Ser	Ser	Thr	Tyr	Arg	Asp	Leu	Arg	Lys	Gly	Val
	115						120					125			
Tyr	Val	Pro	Tyr	Thr	Gln	Gly	Lys	Trp	Glu	Gly	Glu	Leu	Gly	Thr	Asp
	130					135					140				
Leu	Val	Ser	Ile	Pro	His	Gly	Pro	Asn	Val	Thr	Val	Arg	Ala	Asn	Ile
145					150					155					160
Ala	Ala	Ile	Thr	Glu	Ser	Asp	Lys	Phe	Phe	Ile	Asn	Gly	Ser	Asn	Trp
				165					170					175	



Glu	Gly	Ile	Leu	Gly	Leu	Ala	Tyr	Ala	Glu	Ile	Ala	Arg	Pro	Asp	Asp
			180					185						190	
Ser	Leu	Glu	Pro	Phe	Phe	Asp	Ser	Leu	Val	Lys	Gln	Thr	His	Val	Pro
		195					200					205			
Asn	Leu	Phe	Ser	Leu	Gln	Leu	Cys	Gly	Ala	Gly	Phe	Pro	Leu	Asn	Gln
	210					215					220				
Ser	Glu	Val	Leu	Ala	Ser	Val	Gly	Gly	Ser	Met	Ile	Ile	Gly	Gly	Ile
225					230					235					240
Asp	His	Ser	Leu	Tyr	Thr	Gly	Ser	Leu	Trp	Tyr	Thr	Pro	Ile	Arg	Arg
				245					250					255	
Glu	Trp	Tyr	Tyr	Glu	Val	Ile	Ile	Val	Arg	Val	Glu	Ile	Asn	Gly	Gln
			260					265					270		
Asp	Leu	Lys	Met	Asp	Cys	Lys	Glu	Tyr	Asn	Tyr	Asp	Lys	Ser	Ile	Val
		275					280					285			
Asp	Ser	Gly	Thr	Thr	Asn	Leu	Arg	Leu	Pro	Lys	Lys	Val	Phe	Glu	Ala
	290					295					300				
Ala	Val	Lys	Ser	Ile	Lys	Ala	Ala	Ser	Ser	Thr	Glu	Lys	Phe	Pro	Asp
305					310					315					320
Gly	Phe	Trp	Leu	Gly	Glu	Gln	Leu	Val	Cys	Trp	Gln	Ala	Gly	Thr	Thr
				325					330					335	
Pro	Trp	Asn	Ile	Phe	Pro	Val	Ile	Ser	Leu	Tyr	Leu	Met	Gly	Glu	Val
			340					345					350		
Thr	Asn	Gln	Ser	Phe	Arg	Ile	Thr	Ile	Leu	Pro	Gln	Gln	Tyr	Leu	Arg
		355					360					365			
Pro	Val	Glu	Asp	Val	Ala	Thr	Ser	Gln	Asp	Asp	Cys	Tyr	Lys	Phe	Ala
	370					375					380				
Ile	Ser	Gln	Ser	Ser	Thr	Gly	Thr	Val	Met	Gly	Ala	Val	Ile	Met	Glu
385					390					395					400
Gly	Phe	Tyr	Val	Val	Phe	Asp	Arg	Ala	Arg	Lys	Arg	Ile	Gly	Phe	Ala
				405					410					415	
Val	Ser	Ala	Cys	His	Val	His	Asp	Glu	Phe	Arg	Thr	Ala	Ala	Val	Glu
			420					425					430		
Gly	Pro	Phe	Val	Thr	Leu	Asp	Met	Glu	Asp	Cys	Gly	Tyr	Asn	Ile	Pro
		435					440					445			
Gln	Thr	Asp	Glu	Ser											
		450													

<210> 31  
 <211> 1380  
 <212> DNA  
 <213> Homo sapiens

<400> 31  
 atggcccaag ccctgccctg gctcctgctg tggatgggag cgggagtgct gcctgcccac 60



Glu	Gly	Ile	Leu	Gly	Leu	Ala	Tyr	Ala	Glu	Ile	Ala	Arg	Pro	Asp	Asp	180	185	190	
Ser	Leu	Glu	Pro	Phe	Phe	Asp	Ser	Leu	Val	Lys	Gln	Thr	His	Val	Pro	195	200	205	
Asn	Leu	Phe	Ser	Leu	Gln	Leu	Cys	Gly	Ala	Gly	Phe	Pro	Leu	Asn	Gln	210	215	220	
Ser	Glu	Val	Leu	Ala	Ser	Val	Gly	Gly	Ser	Met	Ile	Ile	Gly	Gly	Ile	225	230	235	240
Asp	His	Ser	Leu	Tyr	Thr	Gly	Ser	Leu	Trp	Tyr	Thr	Pro	Ile	Arg	Arg	245	250	255	
Glu	Trp	Tyr	Tyr	Glu	Val	Ile	Ile	Val	Arg	Val	Glu	Ile	Asn	Gly	Gln	260	265	270	
Asp	Leu	Lys	Met	Asp	Cys	Lys	Glu	Tyr	Asn	Tyr	Asp	Lys	Ser	Ile	Val	275	280	285	
Asp	Ser	Gly	Thr	Thr	Asn	Leu	Arg	Leu	Pro	Lys	Lys	Val	Phe	Glu	Ala	290	295	300	
Ala	Val	Lys	Ser	Ile	Lys	Ala	Ala	Ser	Ser	Thr	Glu	Lys	Phe	Pro	Asp	305	310	315	320
Gly	Phe	Trp	Leu	Gly	Glu	Gln	Leu	Val	Cys	Trp	Gln	Ala	Gly	Thr	Thr	325	330	335	
Pro	Trp	Asn	Ile	Phe	Pro	Val	Ile	Ser	Leu	Tyr	Leu	Met	Gly	Glu	Val	340	345	350	
Thr	Asn	Gln	Ser	Phe	Arg	Ile	Thr	Ile	Leu	Pro	Gln	Gln	Tyr	Leu	Arg	355	360	365	
Pro	Val	Glu	Asp	Val	Ala	Thr	Ser	Gln	Asp	Asp	Cys	Tyr	Lys	Phe	Ala	370	375	380	
Ile	Ser	Gln	Ser	Ser	Thr	Gly	Thr	Val	Met	Gly	Ala	Val	Ile	Met	Glu	385	390	395	400
Gly	Phe	Tyr	Val	Val	Phe	Asp	Arg	Ala	Arg	Lys	Arg	Ile	Gly	Phe	Ala	405	410	415	
Val	Ser	Ala	Cys	His	Val	His	Asp	Glu	Phe	Arg	Thr	Ala	Ala	Val	Glu	420	425	430	
Gly	Pro	Phe	Val	Thr	Leu	Asp	Met	Glu	Asp	Cys	Gly	Tyr	Asn	Ile	Pro	435	440	445	
Gln	Thr	Asp	Glu	Ser	His	His	His	His	His	His	His	His	His	His	His	450	455		

<210> 33  
 <211> 25  
 <212> PRT  
 <213> Homo sapiens

<400> 33

096644-05050

```
<400> 39
cggcatccgg ctgcccctgc gtagcgggtct gggtggtgct cactggggtc tgcgtctgcc 60
ccgggagacc qacqaaq                                     77
```

<220>  
<223> Description of Artificial Sequence: Hu-Asp2

```
<210> 41
<211> 51
<212> DNA
<213> Artificial Sequence
```

<400> 41  
gatcgatgac tatctctgac tctccgctgg actctggtat cgaaaccgac g 51

```
<210> 42
<211> 51
<212> DNA
<213> Artificial Sequence
```

<220>  
<223> Description of Artificial Sequence: Caspase 8  
Cleavage Site

```
<400> 42
gatccgtcgg ttccgatacc agagtccagc ggagagtcag agatagtcac c          51
```

```
<210> 43
<211> 32
<212> DNA
<213> Homo sapiens
```

```
<400> 43
aaggatcctt tgtggagatg gtggacaacc tg                               32
```

```
<210> 44
<211> 36
<212> DNA
<213> Homo sapiens
```

```
<400> 44
gaaagctttc atgactcatc tgtctgtgga atgttg          36
```

```
<210> 45
<211> 24
<212> DNA
<213> Artificial Sequence
```

<220>  
<223> Description of Artificial Sequence: 6-His tag

```
<400> 45
gatcgcattca tcaccatcac catg
```

<210> 46  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: 6-His tag

<400> 46  
gatccatggt gatggtgatg atgc 24

<210> 47  
<211> 22  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: primer

<400> 47  
gactgaccac tcgaccaggt tc 22

<210> 48  
<211> 51  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: primer

<400> 48  
cgaattaaat tccagcacac tggctacttc ttgttctgca tctcaaagaa c 51

<210> 49  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: primer

<400> 49  
cgaattaaat tccagcacac tggcta 26

<210> 50  
<211> 1287  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Hu-Asp2(b)  
delta TM

<400> 50  
atggcccaag ccctgccctg gctcctgctg tggatgggag cgggagtgct gcctgcccac 60  
ggcaccacagc acggcatccg gctgcccctg cgcagcggcc tggggggcgc cccctgggg 120  
ctgcggctgc cccgggagac cgacgaagag cccgaggagc ccggccggag gggcagcttt 180  
gtggagatgg tggacaacct gaggggcaag tcggggcagg gctactacgt ggagatgacc 240  
gtgggcagcc ccccgagac gctcaacatc ctggtggata caggcagcag taactttgca 300  
gtgggtgctg cccccaccc cttcctgcat cgctactacc agaggcagct gtccagcaca 360  
taccgggacc tccggaagg tgtgtatgtg ccctacaccc agggcaagt ggaaggggag 420  
ctgggcaccg acctggtaag catccccat ggccccaacg tctgtgtgc tgccaacatt 480  
gctgccatca ctgaatcaga caagttcttc atcaacggct ccaactggga aggcattcctg 540

```
<210> 51
<211> 428
<212> PRT
<213> Artificial Sequence
```

<400> 51.																
Met	Ala	Gln	Ala	Leu	Pro	Trp	Leu	Leu	Leu	Trp	Met	Gly	Ala	Gly	Val	
1				5					10					15		
Leu	Pro	Ala	His	Gly	Thr	Gln	His	Gly	Ile	Arg	Leu	Pro	Leu	Arg	Ser	
			20					25					30			
Gly	Leu	Gly	Gly	Ala	Pro	Leu	Gly	Leu	Arg	Leu	Pro	Arg	Glu	Thr	Asp	
		35					40					45				
Glu	Glu	Pro	Glu	Glu	Pro	Gly	Arg	Arg	Gly	Ser	Phe	Val	Glu	Met	Val	
	50					55					60					
Asp	Asn	Leu	Arg	Gly	Lys	Ser	Gly	Gln	Gly	Tyr	Tyr	Val	Glu	Met	Thr	
65					70					75					80	
Val	Gly	Ser	Pro	Pro	Gln	Thr	Leu	Asn	Ile	Leu	Val	Asp	Thr	Gly	Ser	
				85					90					95		
Ser	Asn	Phe	Ala	Val	Gly	Ala	Ala	Pro	His	Pro	Phe	Leu	His	Arg	Tyr	
			100					105					110			
Tyr	Gln	Arg	Gln	Leu	Ser	Ser	Thr	Tyr	Arg	Asp	Leu	Arg	Lys	Gly	Val	
		115					120					125				
Tyr	Val	Pro	Tyr	Thr	Gln	Gly	Lys	Trp	Glu	Gly	Glu	Leu	Gly	Thr	Asp	
	130					135					140					
Leu	Val	Ser	Ile	Pro	His	Gly	Pro	Asn	Val	Thr	Val	Arg	Ala	Asn	Ile	
145					150					155					160	
Ala	Ala	Ile	Thr	Glu	Ser	Asp	Lys	Phe	Phe	Ile	Asn	Gly	Ser	Asn	Trp	
				165					170					175		
Glu	Gly	Ile	Leu	Gly	Leu	Ala	Tyr	Ala	Glu	Ile	Ala	Arg	Leu	Cys	Gly	
			180					185					190			
Ala	Gly	Phe	Pro	Leu	Asn	Gln	Ser	Glu	Val	Leu	Ala	Ser	Val	Gly	Gly	
		195					200					205				



Ser Met Ile Ile Gly Gly Ile Asp His Ser Leu Tyr Thr Gly Ser Leu  
210 215 220

Trp Tyr Thr Pro Ile Arg Arg Glu Trp Tyr Tyr Glu Val Ile Ile Val  
225 230 235 240

Arg Val Glu Ile Asn Gly Gln Asp Leu Lys Met Asp Cys Lys Glu Tyr  
245 250 255

Asn Tyr Asp Lys Ser Ile Val Asp Ser Gly Thr Thr Asn Leu Arg Leu  
260 265 270

Pro Lys Lys Val Phe Glu Ala Ala Val Lys Ser Ile Lys Ala Ala Ser  
275 280 285

Ser Thr Glu Lys Phe Pro Asp Gly Phe Trp Leu Gly Glu Gln Leu Val  
290 295 300

Cys Trp Gln Ala Gly Thr Thr Pro Trp Asn Ile Phe Pro Val Ile Ser  
305 310 315 320

Leu Tyr Leu Met Gly Glu Val Thr Asn Gln Ser Phe Arg Ile Thr Ile  
325 330 335

Leu Pro Gln Gln Tyr Leu Arg Pro Val Glu Asp Val Ala Thr Ser Gln  
340 345 350

Asp Asp Cys Tyr Lys Phe Ala Ile Ser Gln Ser Ser Thr Gly Thr Val  
355 360 365

Met Gly Ala Val Ile Met Glu Gly Phe Tyr Val Val Phe Asp Arg Ala  
370 375 380

Arg Lys Arg Ile Gly Phe Ala Val Ser Ala Cys His Val His Asp Glu  
385 390 395 400

Phe Arg Thr Ala Ala Val Glu Gly Pro Phe Val Thr Leu Asp Met Glu  
405 410 415

Asp Cys Gly Tyr Asn Ile Pro Gln Thr Asp Glu Ser  
420 425

<210> 52  
<211> 1305  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Hu-Asp2(b)  
delta TM

<400> 52  
atggcccaag ccctgccctg gctcctgctg tggatgggag cgggagtgct gcctgcccac 60  
ggcaccagc acggcatccg gctgcccctg cgcagcggcc tggggggcgc cccctgggg 120  
ctgcggctgc cccgggagac cgacgaagag cccgaggagc ccggccggag gggcagcttt 180  
gtggagatgg tggacaacct gaggggcaag tcggggcagg gctactacgt ggagatgacc 240  
gtgggcagcc cccgcagac gctcaacatc ctggtggata caggcagcag taactttgca 300  
gtgggtgctg cccccaccc cttcctgcat cgctactacc agaggcagct gtccagcaca 360  
taccgggacc tccggaagg tgtgtatgtg ccctacaccc agggcaagtg ggaaggggag 420  
ctgggcaccg acctggtaag catccccat ggccccaacg tcaactgtgc tgccaacatt 480  
gctgccatca ctgaatcaga caagttcttc atcaacggct ccaactggga aggcattcctg 540  
gggctggcct atgctgagat tgccaggctt tgtggtgctg gcttccccct caaccagtct 600

```

gaagtgctgg cctctgtcgg agggagcatg atcattggag gtatcgacca ctcgctgtac 660
acaggcagtc tctggtatac acccatccgg cgggagtggg attatgaggt catcattgtg 720
cgggtggaga tcaatggaca ggatctgaaa atggactgca aggagtacaa ctatgacaag 780
agcattgtgg acagtggcac caccaacctt cgtttgcca agaaagtgtt tgaagctgca 840
gtcaaatacca tcaaggcagc ctctccacg gagaagttcc ctgatggttt ctggctagga 900
gagcagctgg tgtgctggca agcaggcacc accccttgga acattttccc agtcatctca 960
ctctacctaa tgggtgaggt taccaaccag tccttccgca tcaccatcct tccgcagcaa 1020
tacctgcggc cagtggaaga tgtggccacg tcccaagacg actgttataa gtttgccatc 1080
tcacagtcac ccacgggcac tggtatggga gctgttatca tggagggctt ctacgttgct 1140
tttgatcggg cccgaaaacg aattggcttt gctgtcagcg cttgccatgt gcacgatgag 1200
ttcaggacgg cagcgggtgga aggcctttt gtcaccttgg acatggaaga ctgtggctac 1260
aacattccac agacagatga gtcacagcag cagcagcagc agtga 1305

```

<210> 53

<211> 434

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Hu-Asp2(b)  
delta TM

<400> 53

```

Met Ala Gln Ala Leu Pro Trp Leu Leu Leu Trp Met Gly Ala Gly Val
  1           5           10           15
Leu Pro Ala His Gly Thr Gln His Gly Ile Arg Leu Pro Leu Arg Ser
          20           25           30
Gly Leu Gly Gly Ala Pro Leu Gly Leu Arg Leu Pro Arg Glu Thr Asp
          35           40           45
Glu Glu Pro Glu Glu Pro Gly Arg Arg Gly Ser Phe Val Glu Met Val
          50           55           60
Asp Asn Leu Arg Gly Lys Ser Gly Gln Gly Tyr Tyr Val Glu Met Thr
          65           70           75           80
Val Gly Ser Pro Pro Gln Thr Leu Asn Ile Leu Val Asp Thr Gly Ser
          85           90           95
Ser Asn Phe Ala Val Gly Ala Ala Pro His Pro Phe Leu His Arg Tyr
          100          105          110
Tyr Gln Arg Gln Leu Ser Ser Thr Tyr Arg Asp Leu Arg Lys Gly Val
          115          120          125
Tyr Val Pro Tyr Thr Gln Gly Lys Trp Glu Gly Glu Leu Gly Thr Asp
          130          135          140
Leu Val Ser Ile Pro His Gly Pro Asn Val Thr Val Arg Ala Asn Ile
          145          150          155          160
Ala Ala Ile Thr Glu Ser Asp Lys Phe Phe Ile Asn Gly Ser Asn Trp
          165          170          175
Glu Gly Ile Leu Gly Leu Ala Tyr Ala Glu Ile Ala Arg Leu Cys Gly
          180          185          190
Ala Gly Phe Pro Leu Asn Gln Ser Glu Val Leu Ala Ser Val Gly Gly
          195          200          205

```

1020504-1020504

Ser Met Ile Ile Gly Gly Ile Asp His Ser Leu Tyr Thr Gly Ser Leu  
210 215 220

Trp Tyr Thr Pro Ile Arg Arg Glu Trp Tyr Tyr Glu Val Ile Ile Val  
225 230 235 240

Arg Val Glu Ile Asn Gly Gln Asp Leu Lys Met Asp Cys Lys Glu Tyr  
245 250 255

Asn Tyr Asp Lys Ser Ile Val Asp Ser Gly Thr Thr Asn Leu Arg Leu  
260 265 270

Pro Lys Lys Val Phe Glu Ala Ala Val Lys Ser Ile Lys Ala Ala Ser  
275 280 285

Ser Thr Glu Lys Phe Pro Asp Gly Phe Trp Leu Gly Glu Gln Leu Val  
290 295 300

Cys Trp Gln Ala Gly Thr Thr Pro Trp Asn Ile Phe Pro Val Ile Ser  
305 310 315 320

Leu Tyr Leu Met Gly Glu Val Thr Asn Gln Ser Phe Arg Ile Thr Ile  
325 330 335

Leu Pro Gln Gln Tyr Leu Arg Pro Val Glu Asp Val Ala Thr Ser Gln  
340 345 350

Asp Asp Cys Tyr Lys Phe Ala Ile Ser Gln Ser Ser Thr Gly Thr Val  
355 360 365

Met Gly Ala Val Ile Met Glu Gly Phe Tyr Val Val Phe Asp Arg Ala  
370 375 380

Arg Lys Arg Ile Gly Phe Ala Val Ser Ala Cys His Val His Asp Glu  
385 390 395 400

Phe Arg Thr Ala Ala Val Glu Gly Pro Phe Val Thr Leu Asp Met Glu  
405 410 415

Asp Cys Gly Tyr Asn Ile Pro Gln Thr Asp Glu Ser His His His His  
420 425 430

His His

<210> 54  
<211> 2310  
<212> DNA  
<213> Homo sapiens

<400> 54  
atgctgcccg gtttggcact gctcctgctg gccgcctgga cggctcgggc gctggaggta 60  
cccactgatg gtaatgctgg cctgctggct gaaccccaga ttgccatggt ctgtggcaga 120  
ctgaacatgc acatgaatgt ccagaatggg aagtgggatt cagatccatc agggaccaa 180  
acctgcattg ataccaagga aggcattcctg cagtattgcc aagaagtcta ccctgaactg 240  
cagatcacca atgtggtaga agccaaccaa ccagtgacca tccagaactg gtgcaagcgg 300  
ggccgcaagc agtgcaagac ccatccccac tttgtgattc cctaccgctg cttagtgtgt 360  
gagtttgtaa gtgatgcct tctcgttcct gacaagtgca aattcttaca ccaggagagg 420  
atggatgttt gcgaaactca tcttcactgg cacaccgtcg ccaaagagac atgcagtgag 480  
aagagtacca acttgcattg ctacggcatg ttgctgccct gcggaattga caagttccga 540  
ggggtagagt ttgtgtgttg cccactggct gaagaaagtg acaatgtgga ttctgctgat 600

```

gcgaggagg atgactcgga tgtctggtgg ggcggagcag acacagacta tgcagatggg 660
agtgaagaca aagtagtaga agtagcagag gaggaagaag tggctgaggt ggaagaagaa 720
gaagccgatg atgacgagga cgatgaggat ggtgatgagg tagaggaaga ggctgaggaa 780
ccctacgaag aagccacaga gagaaccacc agcattgcca ccaccaccac caccaccaca 840
gagtctgtgg aagaggtggt tgcagaggtg tgctctgaac aagccgagac ggggccgtgc 900
cgagcaatga tctcccgcgtg gtactttgat gtgactgaag ggaagtgtgc cccattcttt 960
tacggcggat gtggcggcaa ccggaacaac tttgacacag aagagtactg catggccgtg 1020
tgtggcagcg ccatgtccca aagtttactc aagactaccc aggaacctct tggccgagat 1080
cctgttaaac ttcctacaac agcagccagt acccctgatg ccgttgacaa gtatctcgag 1140
acacctgggg atgagaatga acatgccccat ttccagaaag ccaaagagag gcttgaggcc 1200
aagcaccgag agagaatgtc ccagggtcatg agagaatggg aagaggcaga acgtcaagca 1260
aagaacttgc ctaaagctga taagaaggca gttatccagc atttccagga gaaagtggaa 1320
tctttggaac aggaagcagc caacgagaga cagcagctgg tggagacaca catggccaga 1380
gtggaagcca tgctcaatga ccgccgccgc ctggccctgg agaactacat caccgctctg 1440
caggctgttc ctctcggcc tcgtcacgtg ttcaatatgc taaagaagta tgtccgcgca 1500
gaacagaagg acagacagca caccctaaag catttcgagc atgtgcgcat ggtggatccc 1560
aagaaagccg ctcagatccg gtcccagggt atgacacacc tccgtgtgat ttatgagcgc 1620
atgaatcagt ctctctccct gctctacaac gtgcctgcag tggccgagga gattcaggat 1680
gaagttgatg agctgcttca gaaagagcaa aactattcag atgacgtctt ggccaacatg 1740
attagtgaac caaggatcag ttacggaaac gatgctctca tgccatcttt gaccgaaacg 1800
aaaaccaccg tggagctcct tcccgtgaat ggagagttca gcctggacga tctccagccg 1860
tggcattctt ttggggctga ctctgtgccca gccaacacag aaaacgaagt tgagcctggt 1920
gatgcccgcc ctgctgccga ccgaggactg accactcgac caggttcttg gttgacaaat 1980
atcaagacgg aggagatctc tgaagtgaag atggatgcag aattccgaca tgactcagga 2040
tatgaagttc atcatcaaaa attggtgttc tttgcagaag atgtgggttc aaacaaagg 2100
gcaatcattg gactcatggt gggcgggtgtt gtcatagcga cagtgatcgt catcaccttg 2160
gtgatgctga agaagaaaca gtacacatcc attcatcatg gtgtggtgga ggttgacgcc 2220
gctgtcaccc cagaggagcg ccacctgtcc aagatgcagc agaacggcta cgaaaatcca 2280
acctacaagt tctttgagca gatgcagaac 2310

```

<210> 55  
 <211> 770  
 <212> PRT  
 <213> Homo sapiens

<400> 55  
 Met Leu Pro Gly Leu Ala Leu Leu Leu Leu Ala Ala Trp Thr Ala Arg  
 1 5 10 15  
 Ala Leu Glu Val Pro Thr Asp Gly Asn Ala Gly Leu Leu Ala Glu Pro  
 20 25 30  
 Gln Ile Ala Met Phe Cys Gly Arg Leu Asn Met His Met Asn Val Gln  
 35 40 45  
 Asn Gly Lys Trp Asp Ser Asp Pro Ser Gly Thr Lys Thr Cys Ile Asp  
 50 55 60  
 Thr Lys Glu Gly Ile Leu Gln Tyr Cys Gln Glu Val Tyr Pro Glu Leu  
 65 70 75 80  
 Gln Ile Thr Asn Val Val Glu Ala Asn Gln Pro Val Thr Ile Gln Asn  
 85 90 95  
 Trp Cys Lys Arg Gly Arg Lys Gln Cys Lys Thr His Pro His Phe Val  
 100 105 110  
 Ile Pro Tyr Arg Cys Leu Val Gly Glu Phe Val Ser Asp Ala Leu Leu  
 115 120 125  
 Val Pro Asp Lys Cys Lys Phe Leu His Gln Glu Arg Met Asp Val Cys  
 130 135 140

005594 05004



Gln Ala Val Pro Pro Arg Pro Arg His Val Phe Asn Met Leu Lys Lys  
485 490 495

Tyr Val Arg Ala Glu Gln Lys Asp Arg Gln His Thr Leu Lys His Phe  
500 505 510

Glu His Val Arg Met Val Asp Pro Lys Lys Ala Ala Gln Ile Arg Ser  
515 520 525

Gln Val Met Thr His Leu Arg Val Ile Tyr Glu Arg Met Asn Gln Ser  
530 535 540

Leu Ser Leu Leu Tyr Asn Val Pro Ala Val Ala Glu Glu Ile Gln Asp  
545 550 555 560

Glu Val Asp Glu Leu Leu Gln Lys Glu Gln Asn Tyr Ser Asp Asp Val  
565 570 575

Leu Ala Asn Met Ile Ser Glu Pro Arg Ile Ser Tyr Gly Asn Asp Ala  
580 585 590

Leu Met Pro Ser Leu Thr Glu Thr Lys Thr Thr Val Glu Leu Leu Pro  
595 600 605

Val Asn Gly Glu Phe Ser Leu Asp Asp Leu Gln Pro Trp His Ser Phe  
610 615 620

Gly Ala Asp Ser Val Pro Ala Asn Thr Glu Asn Glu Val Glu Pro Val  
625 630 635 640

Asp Ala Arg Pro Ala Ala Asp Arg Gly Leu Thr Thr Arg Pro Gly Ser  
645 650 655

Gly Leu Thr Asn Ile Lys Thr Glu Glu Ile Ser Glu Val Lys Met Asp  
660 665 670

Ala Glu Phe Arg His Asp Ser Gly Tyr Glu Val His His Gln Lys Leu  
675 680 685

Val Phe Phe Ala Glu Asp Val Gly Ser Asn Lys Gly Ala Ile Ile Gly  
690 695 700

Leu Met Val Gly Gly Val Val Ile Ala Thr Val Ile Val Ile Thr Leu  
705 710 715 720

Val Met Leu Lys Lys Lys Gln Tyr Thr Ser Ile His His Gly Val Val  
725 730 735

Glu Val Asp Ala Ala Val Thr Pro Glu Glu Arg His Leu Ser Lys Met  
740 745 750

Gln Gln Asn Gly Tyr Glu Asn Pro Thr Tyr Lys Phe Phe Glu Gln Met  
755 760 765

Gln Asn  
770

<210> 56  
<211> 2253  
<212> DNA  
<213> Homo sapiens

CCDS100000000

<400> 56

```

atgctgccccg gtttggcact gctcctgctg gccgcctgga cggctcgggc gctggaggta 60
cccactgatg gtaatgctgg cctgctggct gaaccccaga ttgccatgtt ctgtggcaga 120
ctgaacatgc acatgaatgt ccagaatggg aagtgggatt cagatccatc agggaccaa 180
acctgcattg ataccaagga aggcacctg cagtattgcc aagaagtcta ccctgaactg 240
cagatcacca atgtggtaga agccaaccaa ccagtacca tccagaactg gtgcaagcgg 300
ggccgcaagc agtgcaagac ccatccccac tttgtgattc cctaccgctg cttagttggt 360
gagtttgtaa gtgatgccct tctcgttcct gacaagtgca aattcttaca ccaggagagg 420
atggatgttt gcgaaactca tcttcactgg cacaccgtcg ccaaagagac atgcagtgag 480
aagagtacca acttgcatga ctacggcatg ttgctgccct gcggaattga caagttccga 540
ggggtagagt ttgtgtgttg cccactggct gaagaaagtg acaatgtgga ttctgctgat 600
gcggaggagg atgactcgga tgtctggtgg ggccgagcag acacagacta tgcagatggg 660
agtgaagaca aagtagtaga agtagcagag gaggaagaag tggctgaggt ggaagaagaa 720
gaagccgatg atgacgagga cgatgaggat ggtgatgagg tagaggaaga ggctgaggaa 780
ccctacgaag aagccacaga gagaaccacc aycattgcca ccaccaccac caccaccaca 840
gagtctgtgg aagaggtggt tcgagaggtg tgctctgaac aagccgagac ggggccgtgc 900
cgagcaatga tctcccgtg gtactttgat gtgactgaag ggaagtgtgc cccattcttt 960
tacggcggat gtggcggcaa ccggaacaac tttgacacag aagagtactg catggccgtg 1020
tgtggcagcg ccattcctac aacagcagcc agtaccctg atgccgttga caagtatctc 1080
gagacacctg gggatgagaa tgaacatgcc catttccaga aagccaaaga gaggcttgag 1140
gccaagcacc gagagagaat gtcccaggtc atgagagaat ggggaaggagc agaacgtcaa 1200
gcaaagaact tgcctaaagc tgataagaag gcagttatcc agcatttcca ggagaaagtg 1260
gaatcttttg aacaggaagc agccaacgag agacagcagc tgggtggagac acacatggcc 1320
agagtggag ccattgctcaa tgaccgccc gcctggccc tggagaacta catcaccgct 1380
ctgcaggctg tctctctcgc gcctcgtcac gtgttcaata tgctaaagaa gtatgtccgc 1440
gcagaacaga aggacagaca gcacacccta aagcatttcg agcatgtgcg catggtggat 1500
cccaagaaag ccgctcagat ccggtcccag gttatgacac acctccgtgt gatttatgag 1560
cgcatgaatc agtctctctc cctgctctac aacgtgctg cagtggccga ggagattcag 1620
gatgaagttg atgagctgct tcagaaagag caaaactatt cagatgacgt cttggccaac 1680
atgattagtg aaccaaggat cagttacgga aacgatgctc tcatgccatc tttgaccgaa 1740
acgaaaacca ccgtggagct ccttcccgtg aatggagagt tcagcctgga cgatctccag 1800
ccgtggcatt cttttggggc tgactctgtg ccagccaaca cagaaaacga agttgagcct 1860
gttgatgccc gccctgctgc cgaccgagga ctgaccactc gaccaggttc tgggttgaca 1920
aatatcaaga cggaggagat ctctgaagtg aagatggatg cagaattccg acatgactca 1980
ggatatgaag ttcattcatca aaaattggtg ttctttgcag aagatgtggg ttcaaacaaa 2040
ggtgcaatca ttggactcat ggtgggcggg gttgtcatag cgacagtgat cgtcatcacc 2100
ttggtgatgc tgaagaagaa acagtacaca tccattcacc atggtgtggg ggaggttgac 2160
gccgctgtca cccagagga gcgccacctg tccaagatgc agcagaacgg ctacgaaaat 2220
ccaacctaca agttctttga gcagatgcag aac 2253

```

<210> 57

<211> 751

<212> PRT

<213> Homo sapiens

<400> 57

```

Met Leu Pro Gly Leu Ala Leu Leu Leu Leu Ala Ala Trp Thr Ala Arg
 1             5             10             15

Ala Leu Glu Val Pro Thr Asp Gly Asn Ala Gly Leu Leu Ala Glu Pro
      20             25             30

Gln Ile Ala Met Phe Cys Gly Arg Leu Asn Met His Met Asn Val Gln
      35             40             45

Asn Gly Lys Trp Asp Ser Asp Pro Ser Gly Thr Lys Thr Cys Ile Asp
      50             55             60

Thr Lys Glu Gly Ile Leu Gln Tyr Cys Gln Glu Val Tyr Pro Glu Leu
      65             70             75             80

```



Gln	Ile	Thr	Asn	Val	Val	Glu	Ala	Asn	Gln	Pro	Val	Thr	Ile	Gln	Asn	
				85					90					95		
Trp	Cys	Lys	Arg	Gly	Arg	Lys	Gln	Cys	Lys	Thr	His	Pro	His	Phe	Val	
			100					105					110			
Ile	Pro	Tyr	Arg	Cys	Leu	Val	Gly	Glu	Phe	Val	Ser	Asp	Ala	Leu	Leu	
		115					120					125				
Val	Pro	Asp	Lys	Cys	Lys	Phe	Leu	His	Gln	Glu	Arg	Met	Asp	Val	Cys	
	130					135					140					
Glu	Thr	His	Leu	His	Trp	His	Thr	Val	Ala	Lys	Glu	Thr	Cys	Ser	Glu	
145					150					155					160	
Lys	Ser	Thr	Asn	Leu	His	Asp	Tyr	Gly	Met	Leu	Leu	Pro	Cys	Gly	Ile	
				165					170					175		
Asp	Lys	Phe	Arg	Gly	Val	Glu	Phe	Val	Cys	Cys	Pro	Leu	Ala	Glu	Glu	
			180					185					190			
Ser	Asp	Asn	Val	Asp	Ser	Ala	Asp	Ala	Glu	Glu	Asp	Asp	Ser	Asp	Val	
		195					200					205				
Trp	Trp	Gly	Gly	Ala	Asp	Thr	Asp	Tyr	Ala	Asp	Gly	Ser	Glu	Asp	Lys	
	210					215					220					
Val	Val	Glu	Val	Ala	Glu	Glu	Glu	Glu	Val	Ala	Glu	Val	Glu	Glu	Glu	
225					230					235					240	
Glu	Ala	Asp	Asp	Asp	Glu	Asp	Asp	Glu	Asp	Gly	Asp	Glu	Val	Glu	Glu	
				245					250					255		
Glu	Ala	Glu	Glu	Pro	Tyr	Glu	Glu	Ala	Thr	Glu	Arg	Thr	Thr	Ser	Ile	
				260				265					270			
Ala	Thr	Thr	Thr	Thr	Thr	Thr	Thr	Glu	Ser	Val	Glu	Glu	Val	Val	Arg	
		275					280					285				
Glu	Val	Cys	Ser	Glu	Gln	Ala	Glu	Thr	Gly	Pro	Cys	Arg	Ala	Met	Ile	
	290					295					300					
Ser	Arg	Trp	Tyr	Phe	Asp	Val	Thr	Glu	Gly	Lys	Cys	Ala	Pro	Phe	Phe	
305					310					315					320	
Tyr	Gly	Gly	Cys	Gly	Gly	Asn	Arg	Asn	Asn	Phe	Asp	Thr	Glu	Glu	Tyr	
				325					330					335		
Cys	Met	Ala	Val	Cys	Gly	Ser	Ala	Ile	Pro	Thr	Thr	Ala	Ala	Ser	Thr	
			340					345					350			
Pro	Asp	Ala	Val	Asp	Lys	Tyr	Leu	Glu	Thr	Pro	Gly	Asp	Glu	Asn	Glu	
		355					360					365				
His	Ala	His	Phe	Gln	Lys	Ala	Lys	Glu	Arg	Leu	Glu	Ala	Lys	His	Arg	
	370					375					380					
Glu	Arg	Met	Ser	Gln	Val	Met	Arg	Glu	Trp	Glu	Glu	Ala	Glu	Arg	Gln	
385					390					395					400	
Ala	Lys	Asn	Leu	Pro	Lys	Ala	Asp	Lys	Lys	Ala	Val	Ile	Gln	His	Phe	
				405					410					415		

Gln	Glu	Lys	Val	Glu	Ser	Leu	Glu	Gln	Glu	Ala	Ala	Asn	Glu	Arg	Gln		
			420					425					430				
Gln	Leu	Val	Glu	Thr	His	Met	Ala	Arg	Val	Glu	Ala	Met	Leu	Asn	Asp		
		435					440					445					
Arg	Arg	Arg	Leu	Ala	Leu	Glu	Asn	Tyr	Ile	Thr	Ala	Leu	Gln	Ala	Val		
	450					455					460						
Pro	Pro	Arg	Pro	Arg	His	Val	Phe	Asn	Met	Leu	Lys	Lys	Tyr	Val	Arg		
465					470					475					480		
Ala	Glu	Gln	Lys	Asp	Arg	Gln	His	Thr	Leu	Lys	His	Phe	Glu	His	Val		
				485					490					495			
Arg	Met	Val	Asp	Pro	Lys	Lys	Ala	Ala	Gln	Ile	Arg	Ser	Gln	Val	Met		
			500					505					510				
Thr	His	Leu	Arg	Val	Ile	Tyr	Glu	Arg	Met	Asn	Gln	Ser	Leu	Ser	Leu		
		515					520					525					
Leu	Tyr	Asn	Val	Pro	Ala	Val	Ala	Glu	Glu	Ile	Gln	Asp	Glu	Val	Asp		
	530					535					540						
Glu	Leu	Leu	Gln	Lys	Glu	Gln	Asn	Tyr	Ser	Asp	Asp	Val	Leu	Ala	Asn		
545					550					555					560		
Met	Ile	Ser	Glu	Pro	Arg	Ile	Ser	Tyr	Gly	Asn	Asp	Ala	Leu	Met	Pro		
				565				570						575			
Ser	Leu	Thr	Glu	Thr	Lys	Thr	Thr	Val	Glu	Leu	Leu	Pro	Val	Asn	Gly		
			580					585					590				
Glu	Phe	Ser	Leu	Asp	Asp	Leu	Gln	Pro	Trp	His	Ser	Phe	Gly	Ala	Asp		
		595					600					605					
Ser	Val	Pro	Ala	Asn	Thr	Glu	Asn	Glu	Val	Glu	Pro	Val	Asp	Ala	Arg		
	610					615				620							
Pro	Ala	Ala	Asp	Arg	Gly	Leu	Thr	Thr	Arg	Pro	Gly	Ser	Gly	Leu	Thr		
625					630					635					640		
Asn	Ile	Lys	Thr	Glu	Glu	Ile	Ser	Glu	Val	Lys	Met	Asp	Ala	Glu	Phe		
				645					650					655			
Arg	His	Asp	Ser	Gly	Tyr	Glu	Val	His	His	Gln	Lys	Leu	Val	Phe	Phe		
			660					665					670				
Ala	Glu	Asp	Val	Gly	Ser	Asn	Lys	Gly	Ala	Ile	Ile	Gly	Leu	Met	Val		
		675					680					685					
Gly	Gly	Val	Val	Ile	Ala	Thr	Val	Ile	Val	Ile	Thr	Leu	Val	Met	Leu		
	690					695					700						
Lys	Lys	Lys	Gln	Tyr	Thr	Ser	Ile	His	His	Gly	Val	Val	Glu	Val	Asp		
705					710					715					720		
Ala	Ala	Val	Thr	Pro	Glu	Glu	Arg	His	Leu	Ser	Lys	Met	Gln	Gln	Asn		
				725					730					735			
Gly	Tyr	Glu	Asn	Pro	Thr	Tyr	Lys	Phe	Phe	Glu	Gln	Met	Gln	Asn			
			740					745					750				

<210> 58  
 <211> 2316  
 <212> DNA  
 <213> Homo sapiens

<400> 58  
 atgctgcccc gtttggcact gctcctgctg gccgcctgga cggctcgggc gctggaggta 60  
 cccactgatg gtaatgctgg cctgctggct gaaccccaga ttgccatgtt ctgtggcaga 120  
 ctgaacatgc acatgaatgt ccagaatggg aagtgggatt cagatccatc agggaccaa 180  
 acctgcattg ataccaagga aggcatacct cagtattgcc aagaagtcta ccctgaactg 240  
 cagatcacca atgtggtaga agccaaccaa ccagtacca tccagaactg gtgcaagcgg 300  
 ggccgcaagc agtgcaagac ccatccccac tttgtgattc cctaccgctg cttagttggt 360  
 gagtttgtaa gtgatgccct tctcgttcct gacaagtgca aattcttaca ccaggagagg 420  
 atggatgttt gcgaaactca tcttcactgg cacaccgtcg ccaaagagac atgcagtga 480  
 aagagtacca acttgcattg ctacggcatg ttgctgccct gcggaattga caagttccga 540  
 ggggtagagt ttgtgtgttg cccactggct gaagaaagtg acaatgtgga ttctgctgat 600  
 gcggaggagg atgactcgga tgtctggtgg ggcggagcag acacagacta tgcagatggg 660  
 agtgaagaca aagtagtaga agtagcagag gaggaagaag tggctgaggt ggaagaagaa 720  
 gaagccgatg atgacgagga cgatgaggat ggtgatgagg tagaggaaga ggctgaggaa 780  
 ccctacgaag aagccacaga gagaaccacc agcattgcca ccaccaccac caccaccaca 840  
 gagtctgtgg aagaggtggt tgcagaggtg tgctctgaac aagccgagac ggggccgtgc 900  
 cgagcaatga tctcccgctg gtactttgat gtgactgaag ggaagtgtgc cccattcttt 960  
 tacggcggat gtggcggcaa ccggaacaac tttgacacag aagagtactg catggccgtg 1020  
 tgtggcagcg ccatgtccca aagtttactc aagactacce aggaacctct tggccgagat 1080  
 cctgttaaac ttcctacaac agcagccagt acccctgatg ccgttgacaa gtatctcgag 1140  
 acacctgggg atgagaatga acatgcccac ttccagaaag ccaaagagag gcttgaggcc 1200  
 aagcaccgag agagaatgtc ccaggtcatg agagaatggg aagaggcaga acgtcaagca 1260  
 aagaacttgc ctaaagctga taagaaggca gttatccage atttccagga gaaagtggaa 1320  
 tctttggaac aggaagcagc caacgagaga cagcagctgg tggagacaca catggccaga 1380  
 gtggaagcca tgctcaatga ccgcccgcgc ctggccctgg agaactacat caccgctctg 1440  
 caggctgttc ctctcggcc tctgcacgtg ttcaatatgc taaagaagta tgtccgcgca 1500  
 gaacagaagg acagacagca caccctaaag catttcgagc atgtgcgcat ggtggatccc 1560  
 aagaaagccg ctcatatccg gtcccagggt atgacacacc tccgtgtgat ttatgagcgc 1620  
 atgaatcagt ctctctccct gctctacaac gtgcctgcag tggccgagga gattcaggat 1680  
 gaagttgatg agctgcttca gaaagagcaa aactattcag atgacgtctt ygccaacatg 1740  
 attagtgaac caaggatcag ttacggaaac gatgctctca tgccatcttt gaccgaaacg 1800  
 aaaaccaccg tggagctcct tcccgtgaat ggagagttca gcctggacga tctccagccg 1860  
 tggcattctt ttggggctga ctctgtgccca gccaacacag aaaacgaagt tgagcctgtt 1920  
 gatgcccgcg ctgctgccga ccgaggactg accactcgac caggttcttg gttgacaaat 1980  
 atcaagacgg aggagatctc tgaagtgaag atggatgcag aattccgaca tgactcagga 2040  
 tatgaagtgc atcatcaaaa attggtgttc tttgcagaag atgtgggttc aaacaaagg 2100  
 gcaatcattg gactcatggt gggcgggtgt gtcatagcga cagtgatcgt catcaccttg 2160  
 gtgatgctga agaagaaaca gtacacatcc attcatcatg gtgtggtgga ggttgacgcc 2220  
 gctgtcaccg cagaggagcg ccacctgtcc aagatgcagc agaacggcta cgaaaatcca 2280  
 acctacaagt tctttgagca gatgcagaac aagaag 2316

<210> 59  
 <211> 772  
 <212> PRT  
 <213> Homo sapiens

<400> 59  
 Met Leu Pro Gly Leu Ala Leu Leu Leu Leu Ala Ala Trp Thr Ala Arg  
 1 5 10 15  
 Ala Leu Glu Val Pro Thr Asp Gly Asn Ala Gly Leu Leu Ala Glu Pro  
 20 25 30  
 Gln Ile Ala Met Phe Cys Gly Arg Leu Asn Met His Met Asn Val Gln  
 35 40 45

Asn	Gly 50	Lys	Trp	Asp	Ser	Asp 55	Pro	Ser	Gly	Thr	Lys 60	Thr	Cys	Ile	Asp
Thr 65	Lys	Glu	Gly	Ile	Leu 70	Gln	Tyr	Cys	Gln	Glu 75	Val	Tyr	Pro	Glu	Leu 80
Gln	Ile	Thr	Asn	Val 85	Val	Glu	Ala	Asn	Gln 90	Pro	Val	Thr	Ile	Gln 95	Asn
Trp	Cys	Lys	Arg 100	Gly	Arg	Lys	Gln	Cys 105	Lys	Thr	His	Pro	His 110	Phe	Val
Ile	Pro	Tyr 115	Arg	Cys	Leu	Val	Gly 120	Glu	Phe	Val	Ser	Asp 125	Ala	Leu	Leu
Val	Pro 130	Asp	Lys	Cys	Lys	Phe 135	Leu	His	Gln	Glu	Arg 140	Met	Asp	Val	Cys
Glu 145	Thr	His	Leu	His	Trp 150	His	Thr	Val	Ala	Lys 155	Glu	Thr	Cys	Ser	Glu 160
Lys	Ser	Thr	Asn 165	Leu	His	Asp	Tyr	Gly	Met 170	Leu	Leu	Pro	Cys	Gly 175	Ile
Asp	Lys	Phe	Arg 180	Gly	Val	Glu	Phe	Val 185	Cys	Cys	Pro	Leu	Ala 190	Glu	Glu
Ser	Asp	Asn 195	Val	Asp	Ser	Ala	Asp 200	Ala	Glu	Glu	Asp 205	Asp	Ser	Asp	Val
Trp	Trp 210	Gly	Gly	Ala	Asp	Thr 215	Asp	Tyr	Ala	Asp	Gly 220	Ser	Glu	Asp	Lys
Val 225	Val	Glu	Val	Ala	Glu 230	Glu	Glu	Glu	Val	Ala 235	Glu	Val	Glu	Glu	Glu 240
Glu	Ala	Asp	Asp	Asp 245	Glu	Asp	Asp	Glu	Asp 250	Gly	Asp	Glu	Val	Glu 255	Glu
Glu	Ala	Glu	Glu 260	Pro	Tyr	Glu	Glu	Ala 265	Thr	Glu	Arg	Thr	Thr 270	Ser	Ile
Ala	Thr	Thr 275	Thr	Thr	Thr	Thr	Thr 280	Glu	Ser	Val	Glu	Glu 285	Val	Val	Arg
Glu	Val 290	Cys	Ser	Glu	Gln	Ala 295	Glu	Thr	Gly	Pro	Cys 300	Arg	Ala	Met	Ile
Ser 305	Arg	Trp	Tyr	Phe	Asp 310	Val	Thr	Glu	Gly	Lys 315	Cys	Ala	Pro	Phe	Phe 320
Tyr	Gly	Gly	Cys	Gly 325	Gly	Asn	Arg	Asn	Asn 330	Phe	Asp	Thr	Glu	Glu 335	Tyr
Cys	Met	Ala	Val 340	Cys	Gly	Ser	Ala	Met 345	Ser	Gln	Ser	Leu	Leu 350	Lys	Thr
Thr	Gln	Glu 355	Pro	Leu	Ala	Arg	Asp 360	Pro	Val	Lys	Leu	Pro 365	Thr	Thr	Ala
Ala	Ser 370	Thr	Pro	Asp	Ala	Val 375	Asp	Lys	Tyr	Leu	Glu 380	Thr	Pro	Gly	Asp

Glu	Asn	Glu	His	Ala	His	Phe	Gln	Lys	Ala	Lys	Glu	Arg	Leu	Glu	Ala	385	390	395	400
Lys	His	Arg	Glu	Arg	Met	Ser	Gln	Val	Met	Arg	Glu	Trp	Glu	Glu	Ala	405	410	415	
Glu	Arg	Gln	Ala	Lys	Asn	Leu	Pro	Lys	Ala	Asp	Lys	Lys	Ala	Val	Ile	420	425	430	
Gln	His	Phe	Gln	Glu	Lys	Val	Glu	Ser	Leu	Glu	Gln	Glu	Ala	Ala	Asn	435	440	445	
Glu	Arg	Gln	Gln	Leu	Val	Glu	Thr	His	Met	Ala	Arg	Val	Glu	Ala	Met	450	455	460	
Leu	Asn	Asp	Arg	Arg	Arg	Leu	Ala	Leu	Glu	Asn	Tyr	Ile	Thr	Ala	Leu	465	470	475	480
Gln	Ala	Val	Pro	Pro	Arg	Pro	Arg	His	Val	Phe	Asn	Met	Leu	Lys	Lys	485	490	495	
Tyr	Val	Arg	Ala	Glu	Gln	Lys	Asp	Arg	Gln	His	Thr	Leu	Lys	His	Phe	500	505	510	
Glu	His	Val	Arg	Met	Val	Asp	Pro	Lys	Lys	Ala	Ala	Gln	Ile	Arg	Ser	515	520	525	
Gln	Val	Met	Thr	His	Leu	Arg	Val	Ile	Tyr	Glu	Arg	Met	Asn	Gln	Ser	530	535	540	
Leu	Ser	Leu	Leu	Tyr	Asn	Val	Pro	Ala	Val	Ala	Glu	Glu	Ile	Gln	Asp	545	550	555	560
Glu	Val	Asp	Glu	Leu	Leu	Gln	Lys	Glu	Gln	Asn	Tyr	Ser	Asp	Asp	Val	565	570	575	
Leu	Ala	Asn	Met	Ile	Ser	Glu	Pro	Arg	Ile	Ser	Tyr	Gly	Asn	Asp	Ala	580	585	590	
Leu	Met	Pro	Ser	Leu	Thr	Glu	Thr	Lys	Thr	Thr	Val	Glu	Leu	Leu	Pro	595	600	605	
Val	Asn	Gly	Glu	Phe	Ser	Leu	Asp	Asp	Leu	Gln	Pro	Trp	His	Ser	Phe	610	615	620	
Gly	Ala	Asp	Ser	Val	Pro	Ala	Asn	Thr	Glu	Asn	Glu	Val	Glu	Pro	Val	625	630	635	640
Asp	Ala	Arg	Pro	Ala	Ala	Asp	Arg	Gly	Leu	Thr	Thr	Arg	Pro	Gly	Ser	645	650	655	
Gly	Leu	Thr	Asn	Ile	Lys	Thr	Glu	Glu	Ile	Ser	Glu	Val	Lys	Met	Asp	660	665	670	
Ala	Glu	Phe	Arg	His	Asp	Ser	Gly	Tyr	Glu	Val	His	His	Gln	Lys	Leu	675	680	685	
Val	Phe	Phe	Ala	Glu	Asp	Val	Gly	Ser	Asn	Lys	Gly	Ala	Ile	Ile	Gly	690	695	700	
Leu	Met	Val	Gly	Gly	Val	Val	Ile	Ala	Thr	Val	Ile	Val	Ile	Thr	Leu	705	710	715	720

Val Met Leu Lys Lys Lys Gln Tyr Thr Ser Ile His His Gly Val Val  
725 730 735

Glu Val Asp Ala Ala Val Thr Pro Glu Glu Arg His Leu Ser Lys Met  
740 745 750

Gln Gln Asn Gly Tyr Glu Asn Pro Thr Tyr Lys Phe Phe Glu Gln Met  
755 760 765

Gln Asn Lys Lys  
770

<210> 60  
<211> 2259  
<212> DNA  
<213> Homo sapiens

<400> 60  
atgctgcccc gtttggcact gctcctgctg gccgcctgga cggctcgggc gctggaggta 60  
cccactgatg gtaatgctgg cctgctggct gaaccccaga ttgccatgtt ctgtggcaga 120  
ctgaacatgc acatgaatgt ccagaatggg aagtgggatt cagatccatc agggaccaa 180  
acctgcattg ataccaagga aggcacctcg cagtattgcc aagaagtcta ccctgaactg 240  
cagatcacca atgtggtaga agccaaccaa ccagtaccca tccagaactg gtgcaagcgg 300  
ggcgcgaagc agtgcaagac ccatccccac tttgtgattc cctaccgctg cttagtgtgt 360  
gagtttgtaa gtgatgccct tctcgttcct gacaagtcca aattcttaca ccaggagagg 420  
atggatgttt gcgaaactca tcttcactgg cacaccgtcg ccaaagagac atgcagttag 480  
aagagtacca acttgcattg ctacggcatt ttgctgccct gcggaattga caagtccga 540  
ggggttagagt ttgtgtgttg cccactggct gaagaaagtg acaatgtgga ttctgctgat 600  
gcggaggagg atgactcgga tgtctgggtg ggcggagcag acacagacta tgcagatggg 660  
agtgaagaca aagtagtaga agtagcagag gaggaagaag tggctgaggt ggaagaagaa 720  
gaagccgatg atgacgagga cgatgaggat ggtgatgagg tagaggaaga ggctgaggaa 780  
ccctacgaag aagccacaga gagaaccacc agcattgcca ccaccaccac caccaccaca 840  
gagtctgtgg aagaggtggt tgcagaggtg tgctctgaac aagccgagac ggggccgtgc 900  
cgagcaatga tctcccgtcg gtactttgat gtgactgaag ggaagtgtgc cccattcttt 960  
tacggcggat gtggcggcaa ccggaacaac tttgacacag aagagtactg catggccgtg 1020  
tgtggcagcg ccattcctac aacagcagcc agtaccctcg atgccgttga caagtatctc 1080  
gagacacctg gggatgagaa tgaacatgcc catttccaga aagccaaaga gaggcttgag 1140  
gccaagcacc gagagagaat gtcccaggtc atgagagaat gggagagagg agaacgtcaa 1200  
gcaaagaact tgcctaaagc tgataagaag gcagttatcc agcatttcca ggagaaagtg 1260  
gaatctttgg aacaggaagc agccaacgag agacagcagc tgggtggagac acacatggcc 1320  
agagtggagc ccattgctcaa tgaccgcccgc cgcctggccc tggagaacta catcaccgct 1380  
ctgcaggctg ttcctcctcg gcctcgtcac gtgttcaata tgctaaagaa gtatgtccgc 1440  
gcagaacaga aggacagaca gcacacccta aagcatttcg agcatgtgcg catggtggat 1500  
cccaagaaag ccgctcagat ccggtcccag gttatgacac acctccgtgt gatttatgag 1560  
cgcatgaatc agtctctctc cctgctctac aacgtgcctg cagtggccga ggagattcag 1620  
gatgaagttg atgagctgct tcagaaagag caaaactatt cagatgacgt cttggccaac 1680  
atgattagtg aaccaaggat cagttacgga aacgatgctc tcatgccatc tttgaccgaa 1740  
acgaaaacca ccgtggagct ccttcccgtg aatggagagt tcagcctgga cgatctccag 1800  
ccgtggcatt cttttggggc tgactctgtg ccagccaaca cagaaaacga agttgagcct 1860  
gttgatgccc gccctgctgc cgaccgagga ctgaccactc gaccaggttc tgggttgaca 1920  
aatatcaaga cggaggagat ctctgaagtg aagatggatg cagaattccg acatgactca 1980  
ggatataagc ttcattcatc aaaattgggt ttctttgcag aagatgtggg ttcaaacaaa 2040  
ggtgcaatca ttggactcat ggtgggcggg gtgtgtcatg cgacagtgat cgtcatcacc 2100  
ttgggtgatg tgaagaagaa acagtacaca tccattcacc atggtgtggt ggagggtgac 2160  
gccgtgtgca ccccagagga gcgccacctg tccaagatgc agcagaacgg ctacgaaaat 2220  
ccaacctaca agttctttga gcagatgcag aacaagaag 2259

<210> 61  
<211> 753  
<212> PRT  
<213> Homo sapiens

<400> 61

Met	Leu	Pro	Gly	Leu	Ala	Leu	Leu	Leu	Leu	Ala	Ala	Trp	Thr	Ala	Arg	1	5	10	15
Ala	Leu	Glu	Val	Pro	Thr	Asp	Gly	Asn	Ala	Gly	Leu	Leu	Ala	Glu	Pro	20	25	30	
Gln	Ile	Ala	Met	Phe	Cys	Gly	Arg	Leu	Asn	Met	His	Met	Asn	Val	Gln	35	40	45	
Asn	Gly	Lys	Trp	Asp	Ser	Asp	Pro	Ser	Gly	Thr	Lys	Thr	Cys	Ile	Asp	50	55	60	
Thr	Lys	Glu	Gly	Ile	Leu	Gln	Tyr	Cys	Gln	Glu	Val	Tyr	Pro	Glu	Leu	65	70	75	80
Gln	Ile	Thr	Asn	Val	Val	Glu	Ala	Asn	Gln	Pro	Val	Thr	Ile	Gln	Asn	85	90	95	
Trp	Cys	Lys	Arg	Gly	Arg	Lys	Gln	Cys	Lys	Thr	His	Pro	His	Phe	Val	100	105	110	
Ile	Pro	Tyr	Arg	Cys	Leu	Val	Gly	Glu	Phe	Val	Ser	Asp	Ala	Leu	Leu	115	120	125	
Val	Pro	Asp	Lys	Cys	Lys	Phe	Leu	His	Gln	Glu	Arg	Met	Asp	Val	Cys	130	135	140	
Glu	Thr	His	Leu	His	Trp	His	Thr	Val	Ala	Lys	Glu	Thr	Cys	Ser	Glu	145	150	155	160
Lys	Ser	Thr	Asn	Leu	His	Asp	Tyr	Gly	Met	Leu	Leu	Pro	Cys	Gly	Ile	165	170	175	
Asp	Lys	Phe	Arg	Gly	Val	Glu	Phe	Val	Cys	Cys	Pro	Leu	Ala	Glu	Glu	180	185	190	
Ser	Asp	Asn	Val	Asp	Ser	Ala	Asp	Ala	Glu	Glu	Asp	Asp	Ser	Asp	Val	195	200	205	
Trp	Trp	Gly	Gly	Ala	Asp	Thr	Asp	Tyr	Ala	Asp	Gly	Ser	Glu	Asp	Lys	210	215	220	
Val	Val	Glu	Val	Ala	Glu	Glu	Glu	Glu	Val	Ala	Glu	Val	Glu	Glu	Glu	225	230	235	240
Glu	Ala	Asp	Asp	Asp	Glu	Asp	Asp	Glu	Asp	Gly	Asp	Glu	Val	Glu	Glu	245	250	255	
Glu	Ala	Glu	Glu	Pro	Tyr	Glu	Glu	Ala	Thr	Glu	Arg	Thr	Thr	Ser	Ile	260	265	270	
Ala	Thr	Thr	Thr	Thr	Thr	Thr	Thr	Glu	Ser	Val	Glu	Glu	Val	Val	Arg	275	280	285	
Glu	Val	Cys	Ser	Glu	Gln	Ala	Glu	Thr	Gly	Pro	Cys	Arg	Ala	Met	Ile	290	295	300	
Ser	Arg	Trp	Tyr	Phe	Asp	Val	Thr	Glu	Gly	Lys	Cys	Ala	Pro	Phe	Phe	305	310	315	320



Tyr	Gly	Gly	Cys	Gly 325	Gly	Asn	Arg	Asn	Asn 330	Phe	Asp	Thr	Glu	Glu 335	Tyr
Cys	Met	Ala	Val 340	Cys	Gly	Ser	Ala	Ile 345	Pro	Thr	Thr	Ala	Ala	Ser	Thr
Pro	Asp	Ala 355	Val	Asp	Lys	Tyr	Leu 360	Glu	Thr	Pro	Gly	Asp 365	Glu	Asn	Glu
His	Ala 370	His	Phe	Gln	Lys	Ala 375	Lys	Glu	Arg	Leu	Glu 380	Ala	Lys	His	Arg
Glu 385	Arg	Met	Ser	Gln	Val 390	Met	Arg	Glu	Trp	Glu 395	Glu	Ala	Glu	Arg	Gln 400
Ala	Lys	Asn	Leu	Pro 405	Lys	Ala	Asp	Lys	Lys 410	Ala	Val	Ile	Gln	His 415	Phe
Gln	Glu	Lys	Val 420	Glu	Ser	Leu	Glu	Gln 425	Glu	Ala	Ala	Asn	Glu	Arg	Gln
Gln	Leu	Val 435	Glu	Thr	His	Met	Ala 440	Arg	Val	Glu	Ala	Met 445	Leu	Asn	Asp
Arg 450	Arg	Arg	Leu	Ala	Leu	Glu 455	Asn	Tyr	Ile	Thr	Ala 460	Leu	Gln	Ala	Val
Pro 465	Pro	Arg	Pro	Arg	His 470	Val	Phe	Asn	Met	Leu 475	Lys	Lys	Tyr	Val	Arg 480
Ala	Glu	Gln	Lys	Asp 485	Arg	Gln	His	Thr	Leu 490	Lys	His	Phe	Glu	His 495	Val
Arg	Met	Val	Asp 500	Pro	Lys	Lys	Ala	Ala 505	Gln	Ile	Arg	Ser	Gln	Val	Met
Thr	His	Leu 515	Arg	Val	Ile	Tyr	Glu 520	Arg	Met	Asn	Gln	Ser 525	Leu	Ser	Leu
Leu 530	Tyr	Asn	Val	Pro	Ala	Val 535	Ala	Glu	Glu	Ile	Gln 540	Asp	Glu	Val	Asp
Glu 545	Leu	Leu	Gln	Lys	Glu 550	Gln	Asn	Tyr	Ser	Asp 555	Asp	Val	Leu	Ala	Asn 560
Met	Ile	Ser	Glu	Pro 565	Arg	Ile	Ser	Tyr	Gly 570	Asn	Asp	Ala	Leu	Met 575	Pro
Ser	Leu	Thr	Glu 580	Thr	Lys	Thr	Thr	Val 585	Glu	Leu	Leu	Pro	Val	Asn	Gly
Glu	Phe	Ser 595	Leu	Asp	Asp	Leu	Gln 600	Pro	Trp	His	Ser	Phe 605	Gly	Ala	Asp
Ser 610	Val	Pro	Ala	Asn	Thr	Glu 615	Asn	Glu	Val	Glu	Pro 620	Val	Asp	Ala	Arg
Pro 625	Ala	Ala	Asp	Arg	Gly 630	Leu	Thr	Thr	Arg	Pro 635	Gly	Ser	Gly	Leu	Thr 640
Asn	Ile	Lys	Thr	Glu 645	Glu	Ile	Ser	Glu	Val 650	Lys	Met	Asp	Ala	Glu 655	Phe

Arg	His	Asp	Ser	Gly	Tyr	Glu	Val	His	His	Gln	Lys	Leu	Val	Phe	Phe
			660					665					670		
Ala	Glu	Asp	Val	Gly	Ser	Asn	Lys	Gly	Ala	Ile	Ile	Gly	Leu	Met	Val
		675					680					685			
Gly	Gly	Val	Val	Ile	Ala	Thr	Val	Ile	Val	Ile	Thr	Leu	Val	Met	Leu
	690					695					700				
Lys	Lys	Lys	Gln	Tyr	Thr	Ser	Ile	His	His	Gly	Val	Val	Glu	Val	Asp
705					710					715					720
Ala	Ala	Val	Thr	Pro	Glu	Glu	Arg	His	Leu	Ser	Lys	Met	Gln	Gln	Asn
			725						730					735	
Gly	Tyr	Glu	Asn	Pro	Thr	Tyr	Lys	Phe	Phe	Glu	Gln	Met	Gln	Asn	Lys
			740					745						750	

Lys

<210> 62  
 <211> 8  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: synthetic

<400> 62  
 Leu Glu Val Leu Phe Gln Gly Pro  
 1 5

<210> 63  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: synthetic

<400> 63  
 Ser Glu Val Asn Leu Asp Ala Glu Phe Arg  
 1 5 10

<210> 64  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: synthetic

<400> 64  
 Ser Glu Val Lys Met Asp Ala Glu Phe Arg  
 1 5 10

<210> 65  
 <211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 65

Arg Arg Gly Gly Val Val Ile Ala Thr Val Ile Val Gly Glu Arg  
1 5 10 15

<210> 66

<211> 518

<212> PRT

<213> Homo sapiens

<400> 66

Met Gly Ala Leu Ala Arg Ala Leu Leu Leu Pro Leu Leu Ala Gln Trp  
1 5 10 15

Leu Leu Arg Ala Ala Pro Glu Leu Ala Pro Ala Pro Phe Thr Leu Pro  
20 25 30

Leu Arg Val Ala Ala Ala Thr Asn Arg Val Val Ala Pro Thr Pro Gly  
35 40 45

Pro Gly Thr Pro Ala Glu Arg His Ala Asp Gly Leu Ala Leu Ala Leu  
50 55 60

Glu Pro Ala Leu Ala Ser Pro Ala Gly Ala Ala Asn Phe Leu Ala Met  
65 70 75 80

Val Asp Asn Leu Gln Gly Asp Ser Gly Arg Gly Tyr Tyr Leu Glu Met  
85 90 95

Leu Ile Gly Thr Pro Pro Gln Lys Leu Gln Ile Leu Val Asp Thr Gly  
100 105 110

Ser Ser Asn Phe Ala Val Ala Gly Thr Pro His Ser Tyr Ile Asp Thr  
115 120 125

Tyr Phe Asp Thr Glu Arg Ser Ser Thr Tyr Arg Ser Lys Gly Phe Asp  
130 135 140

Val Thr Val Lys Tyr Thr Gln Gly Ser Trp Thr Gly Phe Val Gly Glu  
145 150 155 160

Asp Leu Val Thr Ile Pro Lys Gly Phe Asn Thr Ser Phe Leu Val Asn  
165 170 175

Ile Ala Thr Ile Phe Glu Ser Glu Asn Phe Phe Leu Pro Gly Ile Lys  
180 185 190

Trp Asn Gly Ile Leu Gly Leu Ala Tyr Ala Thr Leu Ala Lys Pro Ser  
195 200 205

Ser Ser Leu Glu Thr Phe Phe Asp Ser Leu Val Thr Gln Ala Asn Ile  
210 215 220

Pro Asn Val Phe Ser Met Gln Met Cys Gly Ala Gly Leu Pro Val Ala  
225 230 235 240

```
<210> 67
<211> 475
<212> PRT
<213> Homo sapiens .
```

<400> 67  
Met Gly Ala Leu Ala Arg Ala Leu Leu Leu Pro Leu Leu Ala Gln Trp  
1 5 10 15

Leu	Leu	Arg	Ala	Ala	Pro	Glu	Leu	Ala	Pro	Ala	Pro	Phe	Thr	Leu	Pro
			20					25					30		
Leu	Arg	Val	Ala	Ala	Ala	Thr	Asn	Arg	Val	Val	Ala	Pro	Thr	Pro	Gly
		35					40					45			
Pro	Gly	Thr	Pro	Ala	Glu	Arg	His	Ala	Asp	Gly	Leu	Ala	Leu	Ala	Leu
	50					55					60				
Glu	Pro	Ala	Leu	Ala	Ser	Pro	Ala	Gly	Ala	Ala	Asn	Phe	Leu	Ala	Met
	65				70					75					80
Val	Asp	Asn	Leu	Gln	Gly	Asp	Ser	Gly	Arg	Gly	Tyr	Tyr	Leu	Glu	Met
				85					90					95	
Leu	Ile	Gly	Thr	Pro	Pro	Gln	Lys	Leu	Gln	Ile	Leu	Val	Asp	Thr	Gly
			100					105					110		
Ser	Ser	Asn	Phe	Ala	Val	Ala	Gly	Thr	Pro	His	Ser	Tyr	Ile	Asp	Thr
		115					120					125			
Tyr	Phe	Asp	Thr	Glu	Arg	Ser	Ser	Thr	Tyr	Arg	Ser	Lys	Gly	Phe	Asp
	130					135					140				
Val	Thr	Val	Lys	Tyr	Thr	Gln	Gly	Ser	Trp	Thr	Gly	Phe	Val	Gly	Glu
	145				150					155					160
Asp	Leu	Val	Thr	Ile	Pro	Lys	Gly	Phe	Asn	Thr	Ser	Phe	Leu	Val	Asn
				165					170					175	
Ile	Ala	Thr	Ile	Phe	Glu	Ser	Glu	Asn	Phe	Phe	Leu	Pro	Gly	Ile	Lys
			180					185					190		
Trp	Asn	Gly	Ile	Leu	Gly	Leu	Ala	Tyr	Ala	Thr	Leu	Ala	Lys	Pro	Ser
		195					200					205			
Ser	Ser	Leu	Glu	Thr	Phe	Phe	Asp	Ser	Leu	Val	Thr	Gln	Ala	Asn	Ile
		210				215					220				
Pro	Asn	Val	Phe	Ser	Met	Gln	Met	Cys	Gly	Ala	Gly	Leu	Pro	Val	Ala
	225				230					235					240
Gly	Ser	Gly	Thr	Asn	Gly	Gly	Ser	Leu	Val	Leu	Gly	Gly	Ile	Glu	Pro
				245					250					255	
Ser	Leu	Tyr	Lys	Gly	Asp	Ile	Trp	Tyr	Thr	Pro	Ile	Lys	Glu	Glu	Trp
			260					265					270		
Tyr	Tyr	Gln	Ile	Glu	Ile	Leu	Lys	Leu	Glu	Ile	Gly	Gly	Gln	Ser	Leu
		275					280					285			
Asn	Leu	Asp	Cys	Arg	Glu	Tyr	Asn	Ala	Asp	Lys	Ala	Ile	Val	Asp	Ser
	290					295					300				
Gly	Thr	Thr	Leu	Leu	Arg	Leu	Pro	Gln	Lys	Val	Phe	Asp	Ala	Val	Val
	305				310					315					320
Glu	Ala	Val	Ala	Arg	Ala	Ser	Leu	Ile	Pro	Glu	Phe	Ser	Asp	Gly	Phe
				325					330					335	
Trp	Thr	Gly	Ser	Gln	Leu	Ala	Cys	Trp	Thr	Asn	Ser	Glu	Thr	Pro	Trp
			340					345					350		

<400> 68															
Ala	Leu	Glu	Pro	Ala	Leu	Ala	Ser	Pro	Ala	Gly	Ala	Ala	Asn	Phe	Leu
1				5					10					15	
Ala	Met	Val	Asp	Asn	Leu	Gln	Gly	Asp	Ser	Gly	Arg	Gly	Tyr	Tyr	Leu
			20					25					30		
Glu	Met	Leu	Ile	Gly	Thr	Pro	Pro	Gln	Lys	Leu	Gln	Ile	Leu	Val	Asp
		35					40					45			
Thr	Gly	Ser	Ser	Asn	Phe	Ala	Val	Ala	Gly	Thr	Pro	His	Ser	Tyr	Ile
	50					55					60				
Asp	Thr	Tyr	Phe	Asp	Thr	Glu	Arg	Ser	Ser	Thr	Tyr	Arg	Ser	Lys	Gly
65					70					75					80
Phe	Asp	Val	Thr	Val	Lys	Tyr	Thr	Gln	Gly	Ser	Trp	Thr	Gly	Phe	Val
				85					90					95	
Gly	Glu	Asp	Leu	Val	Thr	Ile	Pro	Lys	Gly	Phe	Asn	Thr	Ser	Phe	Leu
			100					105					110		
Val	Asn	Ile	Ala	Thr	Ile	Phe	Glu	Ser	Glu	Asn	Phe	Phe	Leu	Pro	Gly
		115					120					125			
Ile	Lys	Trp	Asn	Gly	Ile	Leu	Gly	Leu	Ala	Tyr	Ala	Thr	Leu	Ala	Lys
	130					135					140				
Pro	Ser	Ser	Ser	Leu	Glu	Thr	Phe	Phe	Asp	Ser	Leu	Val	Thr	Gln	Ala
145					150					155					160
Asn	Ile	Pro	Asn	Val	Phe	Ser	Met	Gln	Met	Cys	Gly	Ala	Gly	Leu	Pro
				165					170					175	

```

<210> 69
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Peptide

<400> 69
Gly Leu Ala Leu Ala Leu Glu Pro
  1                      5

<210> 70
<211> 8
<212> PRT
<213> Artificial Sequence

```



<223> Description of Artificial Sequence: Peptide

Glu Val Lys Met Asp Ala Glu Phe  
1 5

<213> Artificial Sequence

<223> Description of Artificial Sequence: Peptide

Glu Val Asn Leu Asp Ala Glu Phe  
1 5

<213> Artificial Sequence

<223> Description of Artificial Sequence: Peptide

Leu Val Phe Phe Ala Glu Asp Val  
1 5

<213> Artificial Sequence

<223> Description of Artificial Sequence: Peptide

Lys Leu Val Phe Phe Ala Glu Asp  
1 5

<213> Artificial Sequence

<223> Description of Artificial Sequence: Primer

cgctttaagc ttgccaccat gggcgcactg gcccgggcg

<213> Artificial Sequence

<220>

<400> 75

<210> 76

<211> 4

<212> PRT

<220>

<400> 76

1

<210> 77

<211> 5

<212> PRT

<220>

<400> 77

1

5

<210> 78

<211> 6

<212> PRT

<220>

<400> 78

1

5

<210> 79

<211> 6

<212> PRT

<220>

<400> 79

1

5

<210> 80

<211> 15

<212> PRT

<213> Artificial Sequence

<223> Description of Artificial Sequence: Peptide

Met Cys Ala Glu Val Lys Met Asp Ala Glu Phe Lys Asp Asn Pro  
1 5 10 15

<213> Artificial Sequence

<223> Description of Artificial Sequence: synthetic

Asp Ala Glu Phe Arg  
1 5

<213> Artificial Sequence

<223> Description of Artificial Sequence: synthetic

Ser Glu Val Asn Leu  
1 - - - - - 5